

**Why South African Boards construe elements of their
regulatory obligations differently in respect of Enterprise Risk
Management (ERM)**

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“At the regular meeting of the Board, which never sat for above half an hour, two or three papers were read by Miles Grendall. Melmotte himself would speak a few slow words, intended to be cheery, and always indicative of triumph, and then everybody would agree to everything, somebody would sign something, and the Board for that day would be over.”

“The Way We Live Now”, a satirical novel by Anthony Trollope written in the 1800’s.

Dedication

Firstly, to my most wonderful, loving wife and friend, Liz, who has supported me in every way possible, and encouraged me to set my goals, no matter how ambitious they appeared to be, in the absolute belief that I would achieve them; and to my two brilliant sons Justin and Myles who were ever a source of amusement, encouragement and support.

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Fifthly this dedication is also to my sons' friends who always listened patiently to my theories Gerald, Chris, Johan, Rob, Jaco, Tim and Richard.

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Abstract

Internationally, Boards of companies are increasingly required by law to take responsibility for their risk oversight. For example, the Sarbanes- Oxley Act (2002) in the USA; 2010 UK Corporate Governance Code; The revised Code of, and Report on, Governance Principles for South Africa (King III), (2009) firmly place the onus on the Board for managing risk in the organization. There is appreciable evidence that a high proportion of Boards do not fully embrace these obligations (Beasley M.S et al., 2010, 2011, 2012; FSA, 2007; Deloitte, 2012), leaving businesses highly vulnerable and unprepared for risky events. The aim of this research is to understand why South African Boards, in view of their strict corporate governance regulatory obligations, manage their risks differently. The objectives of this constructivist research are to question Boards on the extent of their adherence to legislated risk management requirements; and by analysing their repertory constructs understand how Board members construe elements of their risk; and further to understand whether Boards suffer from cognitive bias when faced with risky choices as predicted by Prospect Theory; and whether this cognitive bias adds to the risk exposure of the organisation. The research uses empirical data to demonstrate the extent of the shortfall between legislative directives and company practice. As a result of establishing how Boards construe risk, the outcome also highlights reasons for the shortfall between what regulators regard as risk oversight and the challenges Boards face in meeting these risk oversight obligations.

The research examines the causal relationships between certain variables and the risk attitude and processes adopted by the Board. The following issues are evaluated: the differences in attitude to risk between highly compliant Boards and weakly compliant Boards; the differences in risk attitudes between members of the Board; and between Boards of different companies.

The results suggest that; South African Boards face extreme difficulties in making sense of the risk environment; Board members are subject to a high degree of cognitive bias when facing risk and uncertainty; it seems unlikely that Boards behaviour towards risk can be described fully by the tenets of Prospect Theory; Boards suffer from source dependence in assessing risk; Boards' behaviour towards risk is linked to their degree of regulatory adherence in terms of corporate governance.

A behavioural form of moral hazard is identified where Boards which have implemented enterprise risk measures develop a sense of overconfidence in the belief that such measures will automatically and fully protect the business in all circumstances which in turn adds to the overall risk of the business.

A further important indicative result of this research is a ‘Common / Variable Characteristics of Risk’ hypothesis. Boards appear to possess a common set of behavioural characteristics which govern the way they manage their risk, and a variable set of behavioural characteristics, the extent of which is directly linked to the level of risk readiness of the Board, and which also impacts on the way they manage their risk.

This research highlights a possible phenomenon referred to as ‘Reality Drift’ in which Boards of companies may gradually lose touch with key aspects of their businesses through a process of cognitive bias and false and inadequate information. This phenomenon may explain why Boards of many regulated companies make errors of judgement and overlook areas of major risks to their businesses.

This research also briefly addresses many important research questions around risk and risk management as posed in recent relevant publications.

Finally, this research appears to be unique in the study of intact Boards, and adds to the important body of literature in respect of ‘sensemaking’ and ‘group sensemaking’, particularly in the area of risk management.

This research is likely to be of assistance to regulators and company stakeholders in understanding how Boards perceive their regulatory obligations relating to risk oversight, and will provide further insight into risk management processes.

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Appendix N Kelly's Postulates

Glossary of terms

Cognitive bias

Describes the innate natural human biases individuals display when faced with a set of internal and external issues. In this research the term will be used mainly in the context of the bias people exhibit when faced with risk and uncertainty.

Compliance

In this thesis this word refers to the extent to which a company adheres to its various obligations under the legislative framework pertaining to that company in terms of its corporate governance, stock exchange, taxation and all other relevant legislation governing the operation of the company. Weakly compliant and strongly compliant ratings indicate relatively increasing compliance to the requirements of the legislative environment.

Construct

A construct represents the view individuals have construed about the world as they have experienced it; constructs also indicate how individuals are likely to construe the world as they continue to experience it.

Element (of risk)

This term is used in the context of a Repertory Grid, (see definition below) and is an example of the particular topic under discussion. In this research the elements will therefore be elements of risk, which are those specific sources of risk typically identified by Boards as constituting sources of risk to their businesses, such as Market Risk, Operational Risk and Financial Risk.

Enterprise Risk Management

Describes the processes, tools and regulatory measures which are adopted by the company across all facets of its organisation to manage and control internal and external risk.

King III and Corporate Governance

The third report on corporate governance in South Africa was launched in September 2009 in response to the new Companies Act no 71 of 2008 and changes in international

governance trends. This report known as King III was compiled by the King Committee headed by Justice Mervin King and came into effect on 1 March 2010.

King III applies to all entities, regardless of the form of the incorporation or whether it is in the public, private or non-profit sectors. In South Africa, under King III, entities are required to make a statement as to whether or not they apply the principles and then explain their practices. There are 9 main issues to which companies are required to adhere, and report on in the Integrated Report (providing a comprehensive overview on financial and non-financial matters) on corporate governance as shown below:

- Ethical leadership and corporate citizenship
- Best practice Boards and Directors
- Audit committees and their function
- The governance and management of risk
- The governance of information, communication and technology and IT risk.
- Compliance with laws, rules and standards
- Internal audit
- Governing stakeholder relationships
- Integrated Reporting and disclosure

This information was extracted from the King Code of Governance for South Africa 2009, Institute of Directors Southern Africa, www.iodsa.co.za

Prospect Theory

Describes the work of Kahneman and Tversky (1979, 1992). Prospect Theory is a descriptive behavioural hypothesis relating to human cognitive bias when people are faced with risk and uncertainty. It describes individual risk aversion when facing gains, risk seeking when facing losses, loss aversion, and diminishing sensitivity to increasing gains and losses. The Probability Weighting Function describes how individuals distort their view of probabilities, and the Value Weighting Function describes how individuals value gains and losses.

Risk and uncertainty

Risk arises when there is a chance of not being able to achieve set or stated objectives, when the probability of failure is quantifiable. Uncertainty arises when the probability of the alternative outcomes are unknown.

Repertory Grid

A cognitive mapping system which records in a qualitative and quantitative manner the way individuals construe and think about particular issues. It comprises a set of rating scales which uses the individual's own personal constructs about an issue, topic or subject and uses ratings to express the strength or conviction of their personal meanings.

Sensemaking

This term, coined by Weick K.E. (2001), describes the mental or cognitive processes humans undergo in dealing with their internal and external environment.

Specific Risk

An element of risk that can be eliminated either by repeated exposure to the same elements of risk, or by diversifying the business so that it is exposed to the same element of risk from a variety of different sources.

Systematic Risk

An element of risk that cannot be eliminated by diversification, no matter how widely spread the business, and no matter how often the element of risk arises. (Systemic Risk which is not referred to in this thesis relates to aggregation risk (normally amongst financial institutions) which are subject to similar risks and where failure of an entire financial system could be caused by a single source of risk e.g. credit risk).

Chapter 1. Introduction

1.1 Overall intention – aims and objectives

Ever since the epic tales of ancient mythical heroes such as Orpheus and Hercules, human endeavours have been plagued by the unforeseen and unexpected. While this thesis is about risk and uncertainty in a modern regulated business context, it will be shown that the hamartia in a business's efforts to survive is still usually grounded in the combination of capacity for error and misjudgement of risk. As the quotations which follow demonstrate, everywhere there is evidence of hubris of overweening arrogance and pride in the face of logic when presented with risky choices; and the counter effect of intervention through regulatory oversight (in a divine sense perhaps!) to protect the numerous stakeholders of the business from failure.

“From excessive levels of compensation, to shoddy treatment of customers, to a deceitful manipulation of one of the most important interest rates, and now this morning to news of yet another mis-selling scandal, we can see that we need a real change in the culture of the [Banking] industry” (Sir Mervyn King (Governor of the Bank of England, June 29th, 2012).

Banks face billions more in Libor losses, Charles Riley @CNMoneyInvest July 13, 2012: 12:51 PM ET

“Banks implicated in the Libor-fixing scandal will likely take billions more in losses as a result of pending litigation and regulatory penalties... Barclays, the British bank admitted that its staffers attempted to manipulate the London Interbank Offered Rate. Many of the world's major banks, including Deutsche Bank, Royal Bank of Scotland, Credit Suisse, Citigroup, UBS and JPMorgan Chase disclosed that they are being investigated (for irregularities). Barclays has agreed to pay \$453 million to U.S. and U.K. regulators, a settlement which provided the basis for Morgan Stanley's calculation that at least ten additional banks could be fined between \$420 and \$651 million by regulators.”

The overall intention of this research is then to study how Boards make sense and deal with their ERM (enterprise risk management) issues. Enterprise risk can be defined as the extent

to which the outcomes of the corporate strategy of a company may differ from those specified in its corporate objectives, or the extent to which they fail to meet these objectives, be they financial or regulatory. A range of external and internal factors can cause the outcomes of a company's activities to depart from those set out in its corporate objectives (Dickinson, 2001).

With increasing globalization, Boards face an overwhelming barrage of uncertainty and struggle to make sense of their risks. It is to be expected that Boards of different companies, and different members on the Board, all with different experiences and psychological, educational and motivational backgrounds, will interpret the regulatory imposition of risk oversight processes and the external risk environment differently (Daft and Weick, 1984).

Legislators around the globe have responded to the poor performance in terms of risk management by Boards of companies by introducing wave after wave of new legislation which threatens to swamp the administrative machinery of organizations; consequently businesses lag regulation. In the United Kingdom the Financial Services Authority reports that the quality of risk assessment and mitigation strategies amongst financial services companies continues to fall, which can be partially attributable to the rapid pace of regulatory change (e.g. the Basel II solvency requirements) being forced on companies (FSA 2009; FSA 2010; Beasley et al., 2010; King III, 2009).

Against this background of risk management, lays an interesting human phenomenon referred to in the literature on behavioural finance, which describes the many and varied cognitive biases and heuristics which individuals exhibit when faced with choices. Prospect Theory (Kahneman and Tversky, 1979, Tversky and Kahneman, 1992,) is one such Theory, which models choice behavior for individuals when faced with risk and uncertainty. McFadden (1999) summarizes other behavioural tendencies of individuals when faced with choices. See Table 2.3 below.

More specifically, the research intention is to study how and why these various factors influence the ways Boards respond to risk and uncertainty, as set out in the aims and objectives below:

1.1.1 The aims of the research

To examine the reasons why Boards, in spite of strict corporate governance guidelines, deal with the myriad risk issues facing the company, to different effect, in developing strategies to deal with enterprise risk management (ERM).

1.1.2 The objectives of the research

O1: To investigate to what extent Board members of companies which apply corporate governance regulations are liable to human bias in risk estimation;

O2: To investigate to what extent Boards which are less subject to individual human biases are more effective in developing strategies to deal with ERM;

O3: To investigate to what extent Boards that adhere to corporate governance are more effective in developing strategies to deal with ERM.

O4: To examine the ways in which the estimation and personal construing of risk differs between highly compliant and less compliant Boards.

1.2 A rationale and some questions

The constituents of the Dow Jones Industrial Index (comprising 30 leading stocks mainly based in the USA) have changed substantially over the past 50 years, indicating that a proportion of companies fail. Well known examples of failed constituents are General Motors and AIG. As another example, the Board of Northern Rock underestimated the widening spread between money-market and depositor rates and went into receivership. The knowledge base around corporate failure, and the reasons for it, is well documented. Probst and Raisch (2005) discuss some of the effects which have caused large companies such as Enron, United Airlines and Kmart to fail. It is clear that bad decisions on the part of Boards have led to corporate failure. What is not clear from the literature is the extent of failures which have arisen due to factors beyond the control of the Board. "Industry effects alone cannot explain why some companies within an industry fail while others continue to be successful" (Probst and Raisch, 2005, p.90). It is difficult to separate foreseeable from unforeseeable risks.

As discussed above, there is considerable evidence that Regulators have taken steps to attempt to minimize risk of corporate failure by transferring responsibility to the Board. As

Boards are responsible to, and have the authority to act on behalf of, shareholders (and other stakeholders) it seems reasonable to expect Boards to be given the full responsibility to ensure that risk management systems are in place and that proper measures are taken to minimize risk. Regulators (King III, 2010; Deloitte, 2012) have for example given special powers to the Audit Committee and have made provision for the appointment of a Chief Risk Officer. There is evidence of lack of adherence on the part of Boards to regulatory directives (Beasley et al., 2010, 2011 and 2012; Deloitte, 2012). Furthermore the UK Financial Services Authority reports findings of immature enterprise wide risk oversight despite the fact that most respondents described their risk culture as risk averse or strongly risk averse (FSA, 2010).

The case of Telkom, South Africa's fixed line operator is an example of how companies often fail by not managing risk. "The announcement last week that Telkom was exiting the lucrative Nigerian telecoms market has once again highlighted the importance of doing one's homework before entering foreign markets. Telkom's failure in the West African economy has been attributed by analysts to its poor choice of acquisition target when it entered that market. Analysts said that Telkom should not have bought Multi-Links, which uses code division multiple access (CDMA) technology, which is preferred in North America but nowhere else. Telkom could spend as much as R1.3billion to get out of Multi-Links. It spent R3.2billion when it bought the unprofitable company. Telkom has written down the value of the Nigerian business by more than R5.6 billion" (City Press Newspaper, 4 December 2010).

There is evidence that Boards have not implemented the measures they ought to have done (Beasley et al., 2010, 2011, 2012; Deloitte 2012). This evidence is further supported by the measures regulators across the globe have taken to address shortcomings in managing risk. The epistemological gap therefore appears to be *why* Boards have not implemented these measures, and *how* they actually construe their risk oversight responsibilities.

In view of the points made in this section, which identify the heart of the issue as one of poor management of risk-assessment, monitoring, and implementation procedures, what will count as evidence? It seems to be a matter of what Boards pay attention to. Is it possible that many of the corporate failures of the past could have been foreseen by the management in charge. And if so, why did they not act in time? Why are the errors which

occurred so obvious with hindsight? Why do companies keep making the same errors? Do Boards not possess the collective wisdom to learn from others' mistakes? Probst and Raisch (2005) researched 100 large US corporations which had failed, or had suffered serious erosion of their market capitalisations. They identified the following main reasons for corporate failure: in most cases of failure the companies grew and changed too quickly; managers became too powerful; and nurtured an excessive success/risk culture.

It is possible to summarize the 5 salient areas of the knowledge base which are relevant to this research as follows:

- Corporate Governance regulation, implementation and adherence and Boards' level of risk preparedness;
- The natural human biases to which people are subject when faced with risk and uncertainty;
- The degree of risk aversion exhibited by Boards when faced with risky choices;
- The understanding and awareness of the internal and external environment and the use to which cognitive mapping has been used to develop and understand group strategic decision making;
- Finally, the way Boards interact and collaborate as a group in making sense of their risk

This research will thus attempt to provide further answers to the questions of how Boards construe and deal with risk and uncertainty.

Table 4.9 summarises these key characteristics of the knowledge base relating to corporate risk, and how they lead to the derivation of the research question, as follows: Why do South African Boards, in spite of strict corporate governance regulations governing the management of risk, exhibit varying degrees of effectiveness in developing strategies to deal with their enterprise risk management (ERM)?

The following section deals with the structure of the research methodology, and the final section summarises the areas of the knowledge base which are relevant to the research question, and which arise from the rationale for this research.

1.3 Methodology summary

The research methodology will be phenomenological, adopting a constructivist field-based approach. The research level will be initially exploratory with a method based around a comparative multiple case study design structured to make some causal statements possible.

In order to support the triangulation of results, and to obtain as much insight as possible to how Boards understand and deal with risk, data will be collected in several ways as follows:

- interviewees will be required to complete written questionnaires designed to provide data on their risk readiness, the extent of their propensity to assume risk and the degree to which they are subject to cognitive bias in assessing risky situations, as shown in Appendix B. Explicit judgments will be made about the data based on the themes of the Beasley et al., (2010, 2011 and 2012) reports and the work of Kahneman and Tversky (1979, 1992).
- a semi-ethnographic approach will be used to elicit information from members of the Board using Personal Construct Psychology (using a Kellyan (1955/1991) constructivist technique the Repertory grid) which emphasizes the personal aspects of sensemaking and adopts an interpretivist epistemology and a phenomenological constructivist ontology in order to understand how Boards construe their risk taking behaviour.
- a “feedback” session will be conducted with members of the Boards to record and analyse their responses to the intact Board data.

While the techniques described above will use a combination of qualitative and quantitative forms of analysis, the research remains phenomenological.

Specifically, the design hinges on a comparison between the differences in views held by 3 distinct Boards, 2 of whom are selected on the basis of stronger regulatory compliance in the area of risk management, and the other on the basis of weaker regulatory compliance. While the choice of the above “polar” comparison between highly and weakly compliant firms seems obvious at this stage, other interesting polarities designed to test the effect of other variables or to test the influence of other factors by means of systematic comparisons – referred to as “replication”- arose during the course of the research highlighted other

important aspects of the research (Yin, 2003). A great deal of research has been conducted using case studies as a research strategy (Eisenhardt, 1989).

In order to develop a systematic basis to analyse human cognition – and in our case how Boards understand risk and its ramifications- Kelly (1955/1991) developed personal construct theory (PCT), an explicit theory of human understanding. To elicit understanding (or “sensemaking”, in Weik’s (2001) terms), Kelly (1955/1991) developed Repertory Grid analysis (RepGrid), a cognitive mapping technique for measuring intended meaning.

The RepGrid technique, which is a powerful mapping tool (Jankowicz 2004; Wright R.P., 2006) used to explore the depths of cognitive understanding and reasoning, particularly in terms of how people make sense of their internal and external environment, (Weik 2001; Kelly 1955/1991) was used in the account which follows to elicit how intact Boards construed elements of their regulatory obligations with respect to risk management. RepGrid techniques have been widely reported in the literature as providing a “powerful, rigorous and systematic interviewing approach” (Wright R.P., 2006, p.295) of eliciting how cognitive behaviour might influence how Boards engage in strategic decision making in terms of ERM (Alexander et al., 2011; Jankowicz 1990; Wright R.P., 2004, 2006, 2008; Wright and Jankowicz, 2007).

The empirical work was structured round several stages: a) choice of participant Boards b) pilot study development of two questionnaires, assessing Risk Readiness; and Risk Aversion c) pilot study assessment of a structured interview technique, the RepGrid d) a main study which applied the questionnaires, after certain modifications and additions, and a program of RepGrid interview to three selected Boards. Importantly, and this may be a unique aspect of this particular thesis, is the knowledge gained from feedback sessions with the 3 Boards.

1.4 Signposting

The thesis is set out in 8 Chapters as follows:

- Chapter 2 the literature review is set out in 4 separate parts, and deals with a range of issues facing businesses, including the legislative environment; the state of risk readiness; cognitive bias when faced with risk and uncertainty and the literature

relating to Prospect Theory, a model describing human decisions when faced with risk and uncertainty; and interaction between Board members in decision making.

- Chapter 3 deals with research methodology.
- Chapter 4 deals with the pilot study and the results of the pilot study and modifications to the questionnaires used in the pilot study (9 Board members from different companies were interviewed and the results presented and discussed). The questionnaires in the pilot study were obtained from: Beasley et al. (2010, 2011, 2012); from Kahneman and Tversky (1992) and the RepGrid methodology derived from Jankowicz (2006).
- Chapter 5 deals with the results of the main study questionnaires used to elicit data: the Risk Readiness Questionnaire, the Risk Aversion Questionnaire and the Risk Bias Questionnaire. These final form questions, which appear in Appendix B, arose out of the results of the pilot study.
- Chapter 6 is the main findings Chapter and covers the RepGrid results.
- Having collected and analysed the results, attention then turns to the results of the Research Objectives, in Chapter 7 and further theory development and the identification of a potentially important hypothesis, referred to as the Common/Variable Risk Hypothesis.
- Chapter 8 deals with the summary and conclusions and answers the research question.

The following Chapter 2 deals with the literature review, in 4 parts.

Chapter 2. Literature Review

2.1 Signposting

The literature review addresses 4 key themes arising from the rationale outlined in Chapter 1 above, and is presented in 4 parts as follows:

Chapter 2 Literature Review Part 1

Corporate Board decision making in the context of the regulatory environment

Chapter 2 Literature Review Part 2

Policy Practice Implementation Gap in respect of Corporate Governance and Enterprise Risk Management (ERM)

Chapter 2 Literature Review Part 3

Behavioural issues in Board decision making

Chapter 2 Literature Review Part 4

Literature review synthesis establishing links between risk assessment, Board decision making and risk regulation

Chapter 2 Literature Review Part 1

Role of Corporate Board decision making

2.2 Background to Organisation Theory and Corporate Board Decision Making

In this Part attention will be paid to the many and varied processes, strategies and influences which determine Board responses to the internal and external environment, with particular emphasis on how Boards make decisions when faced with risk and uncertainty. For the purposes of this thesis, risk and uncertainty are defined in the glossary, and their definitions are shown here for convenience. “Risk arises when there is a chance of not being able to achieve set or stated objectives, when the probability of failure or gain is

quantifiable. Uncertainty arises when the probability of the alternative outcomes are unknown.”

2.3 Structure of this Part

This complicated Part deals with organisation theory and the corporate decision making process of Boards. This vast topic on Board response to corporate governance and ERM has been addressed from many different angles, such as construct theory and organisational sensemaking (Kelly 1955/91; Weick 1995, Wright, 2004, 2006, 2008; Pandza, 2009), behavioural perspectives around risk and uncertainty, (Kahneman and Tversky, 1979,1992; Huse, 2005), strategic responses to organisational processes (Oliver 1991, 1997; Arena et al., 2010), institutional complexity and organisational responses to corporate governance as a form of institutional complexity (Scott, 2008; Greenwood et al., 2012), the role of strategic risk management and regulatory compliance (Arnold et al., 2011), the complexity, challenges and shortfalls in the implementation of ERM, (Beasley et al., 2005, 2010, 2011, 2012, 2013 ; McShane et al., 2012), impact of corporate governance on firm value and whether firms should actively pursue ERM (McShane et al., 2012), operational structures such as the CEO/Board relationship (Boyd et al., 2011), corporate governance regulation (King III , 2009), and so on.

This thesis focuses on how Boards of companies construe and make sense of the risk issues which face the company. All the topics mentioned in the previous section have a varying role to play in the process of risk management. In order to achieve the formidable challenge of dealing adequately with the research question, it is necessary to touch on the many aspects covered extensively in the literature as briefly outlined above. Figure 2.1 below highlights the many issues to be considered in attempting to understand how Boards deal with risk.

This Chapter 2 Literature Review Part 1 will therefore be presented under the following headings:

Sensemaking, group psychology and early theories of the organization

Background to group psychology in decision and negotiation in strategy making

Organisational Theory and Institutional Logic

Recent Developments in Institutional Theory

Developments in Institutional Approaches to ERM

How Boards respond to institutional change

Figure 2.1 Various factors affecting the way Boards make sense of their risk



2.3.1 Sensemaking, group psychology and early theories of the firm

This Section 2.3.1 deals with “sensemaking”, a term coined by Weick (2001), which describes the mental or cognitive processes humans undergo in dealing with their internal and external environment.

In order to more fully explain differences in cognitive perception between different people, (Weick, 1995) developed the concept of “sensemaking” which he described as a human cognitive process which essentially uses retrospective experiences to explain new events. It is about thinking processes such as “placing items into a framework, comprehending, redressing surprise, constructing meaning and interacting in pursuit of mutual

understanding.” (p.6) Thus “sensemaking” seems to present a particularly relevant concept to assist us in understanding these differences in the way people view issues. Weick (1995) thus gives us an insight into how individuals may make sense of risk. How Boards, comprising individuals, make sense of their risk is discussed next.

“Sensemaking (Weick, 1995) [of risk] is necessitated by conditions of ambiguity in organized life with the presumption of logic and self-fulfilling prophecies and action bias and hindsight. Sensemaking [of risk by Boards] will be influenced by improvisation, indeterminacy in adaptive action, learning under adverse conditions and self-learning systems”.

Boards, comprised of people, are likely to behave with human-like qualities. At times they will be vulnerable, stressed, pressurised and irrational. Boards are therefore likely, from time to time, to “suffer from loss of meaning, surprises and face events that are inconceivable or incomprehensible...and in trying to make sense [Boards] will try and make things rationally accountable to themselves and others” (Weick, 1993 p.633).

Furthermore, Boards members will each be endowed with their own set of cognitive structures, experience and level of understanding of the nature of the threat facing the firm. The strategic response of the Board to external risk depends on the psychological and emotional make-up as well as their sense of commitment to tackling the risk challenges and threats the firm faces (Eden and Ackermann, 2001).

Boards are likely to engage in cognitive simplification processes in their strategic decision making, (Schwenk, 1984) and in particular therefore how they view and deal with risk. These simplification processes lead to in-built biases on the part of Boards. From Mintzberg et al. (1976) it is possible to deduce that Boards may engage in 2 basic activities when trying to deal with the complexity of risk: The first process is recognition of the risk, the second is the diagnosis of risk, where additional data and information is utilised to define risk and the required mitigating strategies.

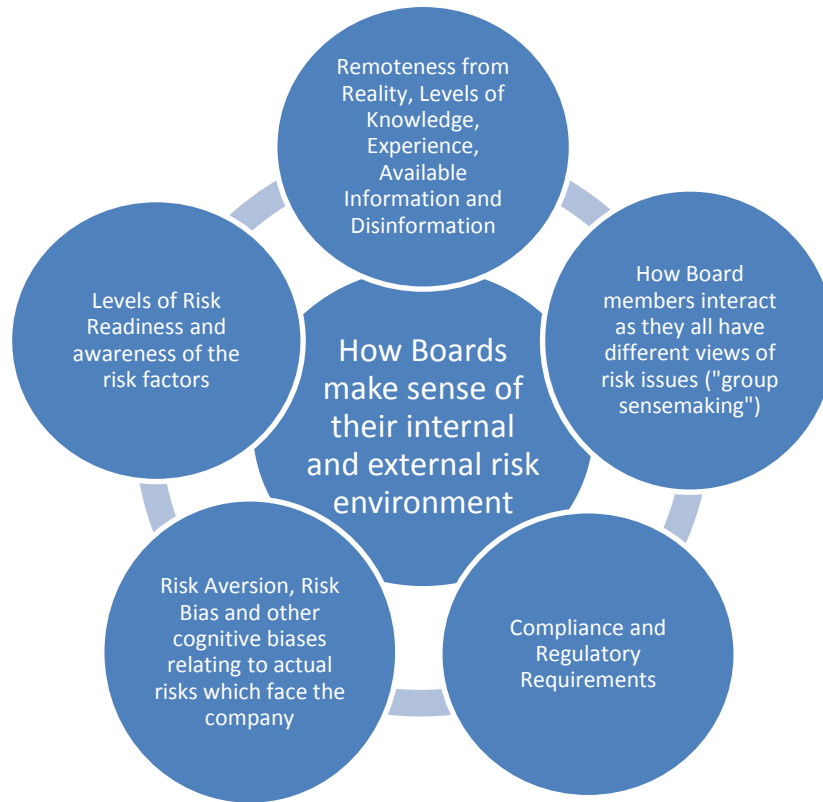
Weick (1995) asserts that organizations [in this case Boards] tend to focus more on retrospective sensemaking than on planning and prospective decision making. Put into the context of how Boards are likely to construe risk, this assertion is consistent with the Beasley reports (Beasley et al., 2010, 2011, 2012) and the FSA (2007) report and highlights the need for regulators to pressurise Boards to anticipate future potential risks, and not

simply to react to past mistakes. Evidence of this forward looking approach to corporate governance process is evident in King III, where Boards are required to anticipate the probability of anticipated future risky scenarios.

Further, Weick (1995) stated that in terms of sensemaking “seeing what one believes and not seeing that for which one has no beliefs are central to sensemaking. Warnings of the unbelievable may go unheeded. This means that the variety in a firm’s repertory of beliefs [relating to risk matters] should affect the amount of time it spends consciously struggling to make sense [of the risks it faces]. The greater the variety of beliefs in a repertoire, the more fully should any [risky] situation be seen, the more [risk management] solutions should be identified, and the more likely it is that someone [on the Board] knows a great deal about what is happening” (words in brackets inserted to highlight the relevance of Weick’s (1995) work to this thesis).

In this research it became clear that Boards do not always have a clear understanding of their risk issues; they have different levels of risk readiness; individual Board members think differently about risk issues from their colleagues; they suffer from cognitive bias, to differing extent, based on the level of their risk preparedness; and are subject to different regulatory requirements based on their primary regulatory authority and industry grouping. These factors are shown in Figure 2.2 below:

Figure 2.2 The issues Boards deal with when trying to make sense of their risk



At this stage it is worthwhile to visit the work of Weick (1995) and Kelly (1955/1991) to consider their generally accepted postulates. The question is whether it is possible to assume that the assertions of Weick and Kelly regarding human behaviour can be applied to this research in respect of Boards.

It would seem that in Weick's (1995) terms, the fundamental philosophical and behavioural assumptions of Board behaviour are clearly set out. There are 7 aspects of sensemaking which need to apply to Boards in determining whether we can rely on Weick's (1995, p.61-62) postulates. These postulates have been modified by the present author to make them specific to Boards against the background of their sensemaking of risk:

- Boards have an identity in the same way humans do
- Boards can engage in retrospective assessment of their risk issues
- Boards can create and enact measures to deal with risk
- Boards interact with the market and its stakeholders
- Boards have an on-going agenda with respect to their risk management
- Boards provide salience to a portion of their views of risk matters
- For Boards, sufficiency and plausibility in risk matters takes precedence **over** accuracy of probability assessments

It would seem that Boards comply with these postulates, so that the basis and methods used for trying to “make sense” of their risk making is reliable.

Further, Kelly’s (1955/1991) fundamental postulate as well as the corollaries as shown in Appendix N also appear to apply equally to organisational entities as well as humans. Boards build representations of the risk phenomena they experience, and in the case of risk, as predictive tools in their business. In this research the different Boards developed their own meaning around how they constructed risk, and produced different constructs for the same events, or elements of risk. A person’s construct evolves over time in the light of new information. The same will happen with Boards. We can therefore probably rely on the RepGrid data as a snapshot of Boards’ views of risk at any one time.

It is possible to conclude therefore that Boards make sense of their risk, and that from Kelly (1955/1991) we can deduce that Boards satisfy the fundamental postulate, enabling this research data to be considered a reliable view of the way Boards make sense of risk, and the information provided during the course of this research in respect of that risk.

As stated earlier, Board members do not agree on many aspects of their risk. Boards however are forced to make decisions. The process of “making sense” of their risk, will therefore consist of some type of negotiation between the “cognitive factions” (Tegarden et al., 2009, Section 2.3.1) within the Board, arriving at a common construing of the risk, though individually it is possible that all may disagree with the final decision! Kelly (1955/1991) offers a way of describing the process in his Sociality Corollary, see Appendix N: ‘to the extent that one person construes the construction process of another, he may play a role in a social process involving the other person’. The point is that Board members do *not* have to share the same constructs, or be using them the same way, as their colleagues; what matters is that each person seeks to understand the others’, whether he agrees with them or not. Boards will as a group therefore find a way of making sense of their risks, a form of “group sensemaking”.

This would suggest that diverse Boards with a large variety in their repertory of beliefs should have a better chance of making sense of their risk issues.

The next sub-section considers further insights from the literature relating to how intact Boards might deal with internal and external risk issues.

While the literature indicates that there has been a considerable amount of research on sensemaking at the individual level, it appears however that there has only been limited research with respect to how sensemaking occurs in groups (Umapathy, 2010). Therefore while there is a framework for understanding how individuals may make sense of risk, in this research how intact Boards attempt to make sense of the risks which face them by means of a comparative case study will be assessed. This is a lengthy sub-section with sub-headings relating to collaboration, the persona of the Board, interaction and polarisation of Board members and further insights into how individual biases may affect the way Boards deal with risk.

Collaboration

Collaborative sensemaking would involve groups engaging in sensemaking processes based on individual world views which may be at odds with others' views. Umapathy (2010, p.2) describes the broad requirements for collaborative sensemaking which include:

“Constructing and sharing knowledge; developing shared knowledge collaboratively; developing shared situation awareness and shared understanding; and communication coordination and collaboration required to support above activities”

In this context considerable obstacles would appear for different types of risk encountered, the different experiences of the Boards, the level of skill and knowledge in a continuously changing internal and external environment. Collaboratively, Boards are likely to behave like their individual members (Allison, 1971).

Daft, Weick (1984) assume that the organisational interpretation process may operate at a higher level than for individuals due to companies' greater cognitive ability, information sharing capacity amongst managers and longer memory.

Boards may be therefore be considered as complex multi-faceted personalities, with varying levels of cognitive and analytic skills, dealing with complex issues, such as trying to make sense of the risk environment. Reaching convergence amongst Board members characterises the act of organising, and enables the organisation to evaluate and deal with risk as a cohesive system (Weick, 1995; Pandza, 2009).

Boards are likely to treat internal and external changes as opportunities or threats (Dutton and Jackson, 1987). Deloitte (2012, p.58) report that only 43% of large South African

companies describe in detail their risk mitigation strategies, and how they maximise their risk opportunities. In assessing how Boards construe risk, it is important to understand their actions when faced with risk and uncertainty, and it would appear from the literature that when faced with risky situations companies often behave in a similar way in dealing with this risk, irrespective of the circumstances (Jackson and Dutton, 1988).

Difficulties with sensemaking Weick (1995) “should result in organisations being left with larger chunks of residual uncertainty, which necessitates their taking larger risks, which increases the probability that they will fail. This prediction originates in an organisation’s capability for sensemaking in the face of uncertainty about the future” (p.97).

Kelly (1995/1991) developed a parallel often overlapping theory of personal understanding called Personal Construct Theory, and in particular a set of corollaries which are referred to in Appendix N. These corollaries are important to understand how Boards, comprising of individuals, will interact and how they make sense of their risk. Importantly the sociality corollary (to the extent that one person construes the construction process of another; he may play a role in the process of that other person), the commonality corollary (to the extent that one person employs a construction of experience which is similar to that employed by another; his processes are psychologically similar to those of the same person) and the individuality corollary (people differ from each other in their construction of events) will shape the interactive processes within the Board in making sense of risky decisions.

The themes of sensemaking and personal construct theory will arise throughout this thesis.

2.3.2 Background to group psychology in decision and negotiation in strategy making

The literature urges researchers to develop holistic views of institutional theory, to include aspects of behavioural theory. Much of this thesis focuses on behavioural issues, particular cognitive biases associated with strategic decisions and attitudes to risk and uncertainty. “Fewer than one out of 8 of articles published in leading scientific management journals is about actual Board behaviour” (Huse, 2005, p. S66).

Huse (2005, p. S67) further describes a framework which integrates various theories in order better to understand Board behaviour in terms of corporate governance, as the following Table 2.1 demonstrates:

Table 2.1 A framework integrating various theories of Board behaviour (Huse, 2005, p. S67)		
General Theory 1	Contingency theory	Various designs of corporate governance need to consider the actors and the environment
General Theory 2	Evolutionary perspective deals with learning processes relating to new institutional logics	The evolutionary perspective is indicated through various learning loops, at individual, group, organisational or societal levels.
Board Role Theories	Agency and resource dependence theories	-
Board Process Theories 1	Nature of interactions taking place in the corporate governance arena	Trust, emotion, adjustment of Boards to external regulatory pressure
Board Process Theories 2	Explanation of the evolution, existence and consequences of formal and informal structures and norms including Board leadership characteristics	-
Board Process Theories 3	Board decision making culture including cognitive conflicts, preparation and involvement, generosity and openness, creativity, critical questioning.	-

Schwenk (1984, p.115) describes in detail 4 of the many inherent biases Boards are likely to make when dealing with strategic issues. These biases are likely to increase risks in formulating strategy, as summarised in Table 2.2, in which Schwenk (1984, p.115) defines 3 stages of strategy formulation:

- Stage 1 – Goal formulation/problem identification in which [Boards] will first recognise and then collect information and diagnose problems or risk issues;
- Stage 2 – Strategic alternatives generation during which a range of plausible solutions is found to address the specific problem or area of uncertainty;
- Stage3 – Evaluation and selection phase during which the best alternative plan or strategy is selected.

Table 2.2 Simplification biases in Board cognitive processes (summarised from Schwenk, 1984)		
Cognitive Bias and Stage 1 goal formulation/problem identification	Stage 2 strategic alternatives generation	Stage 3 evaluation and selection
Anchoring and adjustment leads to underuse of evidence, gaps not being perceived	Inferences of impossibility leads to premature rejection of alternatives	Illusion of control leads to inaccurate assessment of the risks of the alternatives
Prior hypothesis bias leads to evidence being ignored and gaps not perceived	Single outcome calculation leading to restricting alternatives to a single one	Representativeness comprising: insensitivity to predictability; insensitivity to sample size; illusion of validity; all leading to inaccurate prediction of the consequences of alternatives
Escalating commitment leading to significance of the gap being minimised, and the strategy not revised	Denting value trade-offs leading to biased use of evaluation criteria	Devaluation of partially used alternatives, leading to rejection of strongly but poorly presented alternatives
Reasoning by analogy leading to problem misdefined (oversimplified), inappropriate strategy	Problem sets leading to alternatives restricted	-

revision		
Table 2.2 derived from Schwenk, 1984, p.115		

At an individual level, executives have been shown to exhibit different risk taking propensities based on their socio-economic background. There seems to be an association between risk taking and the achievement of greater success in terms of wealth, income, position and authority (MacCrimmon and Wehrung, 1990). Thus executives perceive that greater risk leads to greater wealth creation. This is likely to affect the way they respond to risk and uncertainty.

As a group however, Top Management Teams (TMT's) and Boards in particular also behave as distinct cognitive entities and exhibit characteristics such as memory and forgetfulness, knowledge sharing, cognitive bias, processing of knowledge, formulation and decision making (Daft and Weick, 1984). Lyles and Schwenk (1992, p. 156) discuss "shared understandings within organisations that influence organisational behaviour" and describe 2 characteristics that influence the development of organisational knowledge structures, which refers to the shared beliefs at an organisational level:

- How key decision makers' schemata (individual level knowledge) influence the developments, within the firm, of widely held cause and effect beliefs which have a structure;
- There are core features of the knowledge structure that remain largely invariant over time; there are also peripheral features of the knowledge base which tend to be more ephemeral and shift with changes in the internal and external environment.

It would seem possible that the highly complex nature of the knowledge structures relating to risk and uncertainty mean that such knowledge is not generally available to the top management team by virtue of the high degree of experience, cognitive insight and complexity necessary to fully grasp these issues.

At an individual level, Board members will act on their own "sensemaking" of the strategic situations they face. Their personal constructs will depend on their experience, values and personalities. At Board level, the collective experiences, cognitive interactions, the shared knowledge and interaction of the various personalities will determine the overall strategic response and attitude to risk (Hambrick, 2007).

Group knowledge structures (Lyles and Schwenk, 1992) exist in which the knowledge within a company consists of core knowledge which is constant and reflects the key elements of the company's ethos and strategy, and peripheral knowledge which is more variable and responds to changes in the internal and external environment, and it would seem that there are identifiable characteristics of risk taking executives (MacCrimmon and Wehrung, 1990), while upper echelons theory premises that Boards experience, values and personalities will affect the choices they make (Hambrick 2007). There does not appear to be much literature in the field of how corporate governance has changed the level of risk awareness and strategising around risk issues. The literature (Lyles and Schwenk, 1992) premises that knowledge structures depend to a large extent on the sharing of knowledge within the firm. Simple information is easily communicated and readily understood. As firms increase their level of complexity, so the issues become increasingly complex and information becomes difficult to disseminate and knowledge itself requires explicit management. MacCrimmon and Wehrung (1990, p. 434) suggest that it would be "...desirable to study how changes in risk in one area affect risk taking in the other area." This supported the pilot study results which indicated that Boards exhibit source dependence, whereby the attitude of Boards to different types of risk varies, notwithstanding that the extent of the risk to the business may have similar consequences.

Further, Boards comprise cognitive factions, which are sub-groups of individuals with diverse views and attitudes to risk within the Board. These cognitive factions will interpret in different ways the many and varied risks which face the firm (Tegarden et al., 2009). The interplay of these cognitive factions in terms of their strength within the organisation, how vocal they are and the "political feasibility" (Eden and Ackermann 2001, p.121) of their suggestions will determine how the Board as an intact cognitive entity responds to risk. It is possible that sub-groupings based on cognitive factions can also reflect other kinds of stakeholder differences: those based on having differing functional objectives (e.g. finance, to cut costs; marketing, to meet demand; production, to maintain quality), or, among non-executive directors especially, and people who have directorships on more than one company Board, on being sensitive to the needs of external interest groups.

It is also possible that when faced with highly complex issues Boards may resort to altering their perception of reality, in order to develop responses to risk which are perceived to be soluble with greater certainty and confidence Schwenk (1984). Thus Boards may develop

strategies to deal with perceived problems, and not actual problems– the distinction between ‘perceived’ and ‘actual’ being, clearly, an issue which will be addressed in greater detail in the Methodology chapter. Finally, Wallach et al. (1962) tried to identify answers to the question of how Boards as a group respond to risk. Their empirical studies suggest that groups will tend to take riskier decisions than the average of their counterparts, described as the risky shift phenomenon. This phenomenon will be considered in more detail below.

2.3.3 Organisational Theory and Institutional Logic

In this section the evolution of theory of Board behaviour over the past decade is discussed. Organisations are no longer considered to be run by mostly rational agents dealing with economic and technical issues. Current institutional philosophy projects the company as an entity operating under “institutional prescriptions” which determine their behaviour, and that companies seek “legitimacy and organisational survival” (Forgues et al., 2012, p.460). At a corporate level, Board members in charge of organisations (Greenwood et.al, 2011) face “institutional complexity” (p.318) in confronting an array of internal operational and corporate governance structures with which they must comply, and in their widest sense an external environment comprising the market and the government agencies, regulatory and legal environment, collectively referred to in the literature as **institutional factors**.

It is clear therefore that organisations are beset with an array of complex issues, and that as a group of individuals, Boards strive to make sense of these issues, and further that there is an interaction between these members as they construct their environment, in particular with regard to how they assess risk in the context of regulatory pressures. These themes will run throughout the thesis, and will be discussed in more detail later on.

2.3.4 Developments in Institutional Theory

Attention now turns to how Boards will respond to the external environment (the field). Institutional Theory focuses on the results of the pressures and constraints imposed on businesses as result of **institutional factors** (Oliver 1991), and their influence on conformity to the environment. As with many areas of business, institutional theory has evolved considerably over recent years. “Early versions of institutional theory placed particular emphasis on institutional myths and beliefs as shared social reality and on the processes by which organisations tend to become instilled with value and social meaning” (p.145). Boards do not however always conform to institutional exigencies. Oliver (1991) further

demonstrated the conditions under which “organisations will resist institutionalisation” (p.145), and discussed the complementary though convergent theory of **resource dependence** to “demonstrate how organisational behaviour may vary from passive conformity to active resistance in response to institutional pressures” (p.146). “These relative differences in responses to the external environment reflect divergent assumptions about the degree of choice, awareness, and self-interest that organisations possess for handling external constraints” (p.148).

Globally, (and South Africa is no exception) Boards are required to adhere to a highly structured set of standards relating to corporate governance, and in particular risk management. Institutional theory suggests that Boards would conform to these criteria and would view their actions as socially and legitimately desirable; and would persist until these externally imposed criteria are attained. Strategic decisions relating to risk would therefore be automatically enshrined within the processes of the business.

From a resource dependent perspective however, Boards would exhibit self-serving measures of control and influence over the governance adherence process. Boards have thus moved from traditional socialised and compliant characteristics to a level of greater self-determinacy and control (Forgues et al., 2012).

2.3.5 Developments in Institutional Approaches to ERM

Since the 1990’s there has been accelerating interest in ERM as a holistic form of corporate control over risk issues and as “a new wave of self-regulating approaches” (Arena et al., 2010, p.672).

One of the questions to be answered in this thesis is why Boards respond differently to corporate governance requirements and why their attitude to ERM varies. Institutional theory poses the question in broader terms (Forgues et al., 2012) and asks why “organisations respond differently to seemingly similar institutional demands” (p.461).

Greenwood et al.,(2011); Scott, (2008) argue that organisations are in a state of flux, and their responses to institutional demands, and the degree of institutional complexity, will vary according to changing processes in the internal and external environment, and different companies will experience such complexity to different degrees, and hence will respond to it differently.

In the quest to understand why Boards do not adhere to their regulatory requirements, Greenwood et al. (2011) suggests that different sets of **institutional logics** (loosely defined as a guiding set of principles which govern the behaviour and response of an organisation) may be in conflict, which adds to the level of institutional complexity. For example adherence to corporate governance implies increased legitimacy and less institutional pressure, and at the same time requires management commitment and cost. These 2 logics are incompatible and may result in institutional resistance. Some organisations on the other hand may be able to achieve compatibility (e.g. a compliant position) by managing these conflicts. Generally the higher the number of logics, the greater the degree of institutional complexity, and in the case of risk management, the greater the degree of conflicting logics, perhaps the greater the degree of institutional resistance to compliant risk management.

The nature and extent of institutional complexity is fundamentally (Greenwood et al., 2011) shaped by the structure of the organisations' field within which they are located. At this level the overarching set of meanings and normative criteria become encoded in local logics that are manifested in rituals, practices and day to day behaviour (Greenwood et al., 2011, p. 334), and Scott (2008).

2.3.6 How Boards respond to institutional change

From the literature there appear to be several approaches to the analysis of companies' response to institutional change. Smets et al., (2012, p.878) describe 3 proposed explanations which specifically might explain how Boards respond to their compliance obligations.

1. Board response to the introduction of new legislation, in particular corporate governance, is portrayed as an external shock on the institutional status quo of the firm, resulting in a shift in the firms approach and regulatory attitude and change in internal policies (change to the field level approach).
2. The second portrayal of organisational response to institutional change plays out at the conflict points where the field response to change is contradictory to the status quo, and this conflict results in a change in the organisation to accommodate these institutional pressures.
3. The third portrayal relates to the way the Board deals with "intraorganisational dynamics" (p.878) influenced by political interests of senior managers, the

sensemaking response of the company, dynamics between different cognitive and operational groups and stakeholder demands such as auditors and shareholders.

In particular it seems that it is possible to categorise several outcomes of institutional and field level responses to risk management, set out in the broad headings below:

2.3.7 Voice and intra-organisational power

Boards are legally responsible for the introduction of the risk management strategy of the firm. Clearly there are many different ways in which the Board may implement field level strategies to deal with risk. The proponents [within a Board] of a particular strategy are likely to have their views adopted to the extent of their power and sensible articulation of their logic, and “to the influence of that logic’s field - level proponents over resources, including legitimacy, that they control” (Greenwood et al., 2011, p.349).

2.3.8 Agency

In considering how Boards perceive risk it is important to recognise that they do not behave as individuals with no external constraints except their own personal wealth. Boards are constrained by corporate governance obligations which carry the force of law (Sarbanes-Oxley Act, King III). As “agents” of the principals, that is the shareholders of the company, it can be assumed that Boards will exhibit risk averse tendencies. However some principals will wish their Boards to assume more of a risk seeking approach on the basis that higher risks are rewarded by correspondingly higher returns. The challenge of corporate governance is therefore to align the risks of the Board members with those of the shareholders (Tosi and Gomez-Mejia, 1989).

2.3.9 Executive incentive structures as an influence on Board behaviour and attitude towards risk

The literature appears to deal inconclusively with the impact of executive incentive structures on company performance (Barkema and Gomez-Mejia, 1998). However, (Wright P. et al., 2007) incentive share options are directly associated with higher risk taking on the part of the Board. Interestingly on the subject of executive share ownership, “there is a monotonically positive association between shareholdings and growth-oriented firm risk taking” (Wright P. et al., 2007, p. 83). Higher fixed salaries relative to incentive schemes reduce risk seeking behaviour, and vice versa. Options are asymmetric in terms of their

payoffs. Executives will tend to become more risk taking and focus on the “upside potential of outcome variance” (Wright P. et al., 2007, p.82).

The literature also deals with how Boards adjust their attitudes to, and their tolerance for, risks in line with their compensation structures, as the following examples show:

- Executives treat their own wealth and that of the firm differently (Bebchuck and Fried, 2003), so that executive compensation schemes may not always serve to adjust the human biases Boards may engage in when facing risk;
- Boards may behave contrary to the predictions of Prospect Theory by becoming more risk averse in terms of their own options and remuneration when the firm faces losses, and more risk seeking (in terms of accepting a higher proportion of pay linked to firm performance) when the firm is doing well (Matta, McGuire, 2008).

While this research is based on how Boards construe risks, the above 2 citations are examples of how individual Board members may assume a different risk persona when assuming the mantle of corporate responsibility, and highlight steps Boards may take in the light of their own compensation, to alter the risk seeking / risk mitigating stance of the firm (Holmes et al., 2010, in press).

2.3.10 Corporate Governance impact on the way Boards deal with risk issues

There does not appear to be a great deal of literature on how Boards alter their risk profile to deal with corporate governance restrictions / requirements. An interesting paper by Yue-Fang Wen (2010) investigated the effects of corporate capital investment via the value function of cumulative prospect theory (Kahneman and Tversky, 1992). They used data from 685 listed Taiwanese companies, between 2001 and 2006, using 2 assumptions viz., firm performance as a reference point, and using the change in annual capital investment as a proxy for the value function. In this paper the following issues were observed:

“Biased behaviours of risk aversion relating to capital investment when firms faced gains; and

risk seeking relating to capital investment when firms faced losses;

and loss aversion” (Yue-Fang Wen, 2010, p.126);

as predicted by Prospect Theory.

Further, Yue-Fang Wen (2010) importantly noted that when variables of corporate governance are introduced, the degree of risk aversion in the gain domain is further reduced, and similarly, in the loss domain, levels of risk seeking are diminished. These results demonstrate the importance of the corporate governance mechanism in diminishing biases relating to the way Boards view and deal with risk, particularly those postulated by Prospect Theory (Kahneman and Tversky, 1979) and will form an important part of this research thesis.

In another example of how Boards deal with regulatory uncertainty in the European Airline industry, Engau and Hoffman (2011, p.1) find that “the higher level of [regulatory] uncertainty, the broader the range of strategies devised [to deal with this uncertainty]; and the more future regulation seems likely to affect a firm, the more actively it seeks to cope with the associated uncertainty”.

The external environment also contributes to changes in the way Boards are likely to respond to risk issues. When faced with an external threat, companies may become offensive, defensive or passive and will structure their organisational responses to the nature and interpretation of the threat (Chattopadhyay et al., 2001). Generally the greater the threat, the greater the level of strategic response required.

Faced with regulatory uncertainty and the imposition of greater regulatory demands, Boards need to decide on the appropriate response, taking into account the potential impact of regulatory requirements and the full scale of options available to them.

From a behavioural viewpoint, institutional conformity (e.g. adherence to corporate governance guidelines) may lead to greater firm performance, acting as an incentive for greater compliance (Oliver, 1997). “Institutional conformity may confer legitimacy; social acceptance; access to government contracts and grants; and provide easier access to capital and other scarce resources such as labour” and so on (p.118).

The threat of sanction or criminal action ought to weigh heavily on the minds of Board members, particularly where they embark on actions which could be interpreted as mismanagement (intentional or by oversight) or by attempts to defraud the company and its stakeholders. There are many aspects of illegal governance such as collusion and anti-competitive behaviour, creative accounting practices, misstatements to the regulator and or stakeholders etc. The Bernie Madoff (New York Times, June 28th, 2012) case exemplifies

the flagrant flouting of regulatory responsibilities, and a blinkered approach to its consequences, in spite of an acute awareness of the ramifications of his actions as a former Chairman of the Nasdaq.

2.3.11 Other behavioural factors

One of the interesting aims of this research is to establish, whether in a South African context, risk oversight obligations introduce other behavioural elements and changes. For example are the conclusions of Prospect Theory and the other mental biases observed empirically equally applicable in a regulated corporate environment?

In terms of assessing whether Board composition affected company performance there is conflicting evidence that changes in Board composition affect company performance, Board behaviour and attitudes towards risk. (Bhagat and Black, 1999; Berger, Kock, Shaeck, 2012; Ho, 2012). Most of these studies were concerned with trying to establish some link between the independence of the Board measured by the number of independent directors vs. the number of executive directors and the split of the CEO / Chairman function with performance over a period of time. Other studies related to the Board composition in terms of experience, gender and other personal factors. The aims of the above cited research seem ambitious against the background of rotation of Board members, the difficulties of measuring performance consistently over a long period, and the changes to the nature of businesses over time.

McShane et al., (2011) refers to several other studies referring to measures of compliance (see Glossary - in this thesis compliance refers to the extent to which a company adheres to its various obligations under the legislative framework pertaining to that company in terms of its corporate governance, stock exchange, taxation and all other relevant legislation governing the operation of the company. Weakly compliant and strongly compliant ratings indicate relatively increasing compliance to the requirements of the legislative environment); and performance using the appointment of a Chief Risk Officer CRO as a proxy for equity market ERM implementation; using equity market responses to appointments of senior risk management staff appointments and so on.

2.3.12 Leadership and the role of the CEO on Board risk decisions

The role of the CEO in terms of risk management is to identify the elements of risk of the business and to develop a coherent strategy to deal with these risks.

Wright R.P. (2004, p.61) poses the question: “Why do some firms outperform others?” Several reasons are given, namely successful ones were quick to move, and displayed a sense of urgency with strong leadership traits. Less successful firms were reported to be more concerned with “practices and systems” (Wright R.P., 2004, p. 70), and were less focussed on market dynamics. These results would tend to support a view that a diversified Board made up of strong leadership, and market focussed individuals who were able to get things done quickly would be a recipe for greater success. Thus diversification alone may not be a necessary and sufficient condition to ensure success, it is the nature of the diversification which is important and the nature of the individual strengths brought to bear within the Board. Zahra and Pearce II (1989) conducted a study using a number of variables relating to Board composition to establish a link between such variables and corporate success. For example Board size was found to be significant, the larger the Board, the smaller the chance of bankruptcy. Zahra and Pearce II (1989) reported on a number of studies which demonstrated that firm performance was associated with distinct Board attributes.

From the brief insight into the way different Board compositions can affect company performance, it is reasonable to expect that Board composition is also likely to impact the way Boards construe and deal with risk. This issue will be explored further in Chapters 5 and 6, in the study of risk attitudes within different intact Boards. In a previous Section the need was identified to have techniques which would facilitate the elicitation and analysis of the sensemaking process undertaken by Boards in the development of their strategic thinking regarding risk management. In a later Section the approaches used to describe sensemaking and the various techniques used to elicit information are reviewed.

2.3.13 Size of company as an influence on attitudes to risk and corporate governance

The structure of the company Smets et al., (2012) can influence the Board’s response to institutional demands. For example large corporations will have resources in terms of legitimacy, finance and reputation, and are perhaps less likely to attract the scrutiny of regulators. Smaller firms by contrast lack the expertise and resources to respond as quickly to institutional demands.

2.4 Summary of Chapter 2 Literature Review Part 1

This Part dealt with organisational sensemaking, and institutional issues relating to organisational behaviour, with emphasis on how Boards make sense of their risk. The next

Part, Chapter 2 Literature Review Part 2, deals with the policy practice implementation gap in relation to corporate governance and ERM.

Chapter 2 Literature Review Part 2

Policy Practice Implementation Gap in respect of Corporate Governance and ERM

2.5 Background to Corporate Governance obligations

Globally, Boards of companies are generally subject to strict legal guidelines on their regulatory obligations relating to risk management. The literature (Beasley et al., 2010, 2011, 2012, 2013; Arena et al., 2010) suggests that there is a gap between regulatory prescription and Board practice. Inter alia, this research proposal aims to understand an important issue relating to regulatory risk oversight, viz.:

- to assess whether South African Boards that adhere to corporate governance are more effective in developing strategies to deal with ERM; and in doing so to understand the extent to which South African Boards have addressed risk management and oversight in their organizations as prescribed by King III (2009); and why Boards fall short of their risk management obligations.

There is a considerable amount of legislation in the USA (The Sarbanes- Oxley Act, 2002), the UK (UK Corporate Governance Code 2010), the EU (8th EU Company Law Directive, 2010) and South Africa (King III, 2009) and elsewhere governing the identification, management, mitigation and reporting on risk oversight. Examples are:

*“Board members should satisfy themselves on the integrity of financial information and that financial controls and systems of **risk management** are robust and defensible.”*

UK Corporate Governance Code 2010 (p.11)

Similarly,

*“The Board should be responsible for the process of **risk management**”*

The revised Code of and Report on Governance Principles for South Africa (*King III*), (2009), Chapter 4

Also,

*“..the audit committee shall, inter alia: monitor the effectiveness of the company’s internal control, internal audit where applicable, and **risk management** systems..”*

Guidance on the 8th EU Company Law Directive – article 41; Guidance for Boards and Audit Committees, 2010

Finally,

“..listed companies are required to provide enhanced risk related exposures in their proxy and annual statements.”

Securities and Exchange Commission, 2010

2.5.1 Background to Enterprise Risk Management (ERM)

ERM has emerged as an acronym for a “holistic” and integrated approach (Arena et al., 2010, p.659) to the management of corporate risk. As discussed in the above section, globally, regulators are increasingly applying pressure to companies to apply a range of corporate governance measures to improve financial and other controls within companies. The aspect of corporate governance relating specifically to risk measurement is often referred to as ERM, yet in response to its increasing demand from regulators, auditors, shareholders and ratings firms, it’s “implementation remains poorly integrated” (Arena et al., 2010, p.659), and there is little research “on the factors associated with ERM” (Beasley et al., 2005, p521).

ERM has been defined by the Committee of Sponsoring Organisations of the Treadway Commission (COSO), which states:

“Enterprise Risk Management is a process, effected by an entity’s Board of Directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risks to be within its risk appetite, to provide reasonable assurance regarding achievement of the entity’s objectives.” (COSO, 2004), and defines 8 elements for a successful ERM strategy, as follows:

Internal Environment – how is risk defined and addressed within the organisation

Objective setting – defining goals in terms of risk management

Event identification – identifies endogenous and exogenous risks (up and downside risks) to the firm

Risk assessment – analysis and evaluation of risks

Risk response – defining appropriate measures to deal with risk

Control activities – monitoring of risk mitigation and management strategies

Information and communication – manage information flows

Monitoring – overseeing the ERM process

Enterprise Risk Management (ERM) has emerged “as a construct that ostensibly overcomes limitations of silo-based traditional risk management, yet little is known of its effectiveness” (McShane et al., 2011, p. 641). It would seem that institutional pressures have resulted in Boards focusing more on achieving a legitimate response to ERM management to satisfy regulators, rather than developing a holistic view to risk. Power (2009) discusses “intellectual failure” (p.854) within the ERM model which should be addressed by regulators and Boards.

The reasons for the existence of a policy practice implementation gap are discussed later in this section in greater detail.

2.5.2 State of Readiness of Boards under current legislation

The 2010 Report on the Current State of Enterprise Risk Oversight (Beasley et al., 2010, 2011, 2012, 2013) carried out by Enterprise Risk Management Initiative (The ERM Initiative) in the College of Management at North Carolina State University, in conjunction with the American Institute of Certified Public Accountants (AICPA) concluded that, of the 331 respondents interviewed (mostly CFOs of large listed US companies spread by industry and firm size), a significant proportion are of the view that risk management in their organizations is deficient (see Appendix A for a summary of the results).

In South Africa, Deloitte (2012, p.28), reports that “although risk disclosure has improved, the lack of depth leads us to question the robustness of the risk management process supporting the disclosure. Although a significant proportion of ... companies disclosed the

risks facing the company and provided a risk mitigation plan, the risks disclosed often lack depth and typically [only] deal with generic risks facing corporate South Africa.”

“Only 21% of the [Corporate Governance] reports contain a clear expression by the board of its views relating to the effectiveness of the risk management processes. The board determines the risk policy and has to set the risk appetite and risk tolerance of the company. Management, in turn has the duty to design and implement a risk management plan within the parameters set by the board. In this regard, the disclosures of surveyed companies paint a bleak picture. According to the results, boards would do well if they pay more attention to the critical role they need to play to ensure effective risk management*” (p.58).

**Effective risk management may be defined as a prudent, holistic, collective series of measures taken by a company within the reasonable tolerance of its resources to reduce the impact of its internal and external risk to the point where the company’s vulnerability to shocks is reduced to acceptable levels of probability without affecting unnecessarily the viability of the business.*

Furthermore, the Deloitte Global Director survey announced in Johannesburg on 14th January 2013 revealed that South African directors share similar concerns in respect of governance and risk management as their international counterparts. The South African results of the survey mirrored the global sentiments in the majority of cases with regulation, governance, compliance and risk management being current top of mind issues for Boards. South African Director responses were unanimous that changes in the regulatory environment will impact the Board’s focus over the next few years, particularly since the introduction of King III (See Glossary). According to the survey 100% of South African directors claimed that they are successfully maintaining an appropriate balance between risk oversight, growth, performance and strategy. The high rate of agreement by South African directors was attributed to the fact that South African governance under King III requires an integrated form of reporting comprising risk management, governance and performance measurement. (Deloitte Global Centre for Corporate Governance, Director 360: Degrees of Progress, 2013).

Similarly in the UK, (FSA, 2007) indicated that many firms surveyed were still in the implementation phases of their risk management processes and firms were in fact less prepared than they thought. While the oversight review of the FSA, into mostly financial

firms (banks, insurers), indicated a higher level of compliance than US companies, the report also did not highlight reasons for the shortcomings. It would therefore appear that, globally, regulation is well ahead of implementation.

It is to be expected that Boards of different companies, and different members on the Board, all with different experiences and psychological, educational and motivational backgrounds can be expected to interpret the regulatory imposition of risk oversight processes and the external risk environment differently (Daft and Weick, 1984), suggesting that different Boards will react differently to different external environments.

The question arises now as to why ERM is not fully implemented. The obvious responses are lack of resources, conflicting priorities and lack of understanding, skills and knowledge. The more obscure reasons may be seated in psychology: the daily pressures on staff to conform to a set of procedures to process and report on regulatory issues provides a “cognitively comfortable world which focuses inwards on systems and controls” (Power, 2009, p.852). However the dichotomy of thought which arises when Boards are required to contemplate events which might arise in the future provides a “less comfortable arena” (p.852); time and management thought are needed to assess possible future scenarios which may be seen as an unnecessary distraction from operational exigencies. In short, preparing for the unknown and unexpected is a much more challenging and abstract process than dealing with tangible “rule based” (p.852) operational issues, and this might explain the frictional effects of a properly structured ERM approach.

Arnold et al., (2007) provides insight into the impact of institutional logics in the form of ERM implementation on the organisational processes within the firm. Using 4 case studies, some firms managed to develop an effective internal regulatory structure, while others experienced substantial difficulties, citing interference and disruption to operational processes, and resource limitations putting them at a relative disadvantage to their competitors. These control structures were regarded as limiting their “flexibility to act” and “these results raise questions regarding whether structural differences between firms contributed to different experiences in implementation difficulty and different perceptions in the impact in terms of organisational flexibility” (Arnold et al., 2012, p.173). In this later study based on reported organisational structures and experiences provided by 113 chief audit executives, whose companies had submitted regulatory reports based on the Sarbanes-Oxley (SOX) requirements for internal controls, led to the following conclusions (p.186):

1. The strength of strategic ERM processes is very [sic] predictive of an organisation's flexibility.
2. An organisation's flexibility is positively related to their ability to implement effective processes for addressing compliance with new regulations. The strength of the relationship is mediated by the strength of the control environment.
3. There is evidence that the ability to implement an effective ERM program in line with a regulatory umbrella is more easily achieved by companies that already had some form of ERM system in place, compared to those who had no prior ERM structure in place. (Thus corporate governance legislation appears to present the greatest challenges to those companies who in fact require protection).

2.6 Summary of Chapter 2 Literature Review Part 2

This Chapter 2 Literature Review Part 2 began with a brief introduction to corporate governance legislation worldwide, with particular reference to risk.

In spite of onerous legal requirements, Boards are shown to be lagging in the full implementation of their corporate governance processes, and are struggling to “make sense” (Weick 2001) of their risk environment and face an enormous barrage of unpredictable events on a continual basis. Weick (1995) developed the concept of “sensemaking” to describe the human cognitive process, which uses retrospective experiences to explain responses to new events, and in the context of this research how Boards respond to internal and external risk.

In this situation, Boards engage in a process of collective sensemaking. There is evidence that Boards collaborate and organise, are subject to systematic bias, that cognitive factions emerge, and the Board as a whole develops a unique and complex persona to deal with risk and uncertainty, which are regarded as opportunities or threats. In considering the Board as a “persona” it was to be expected to find in this study that Boards would indeed “make sense” in their own unique way to risk and uncertainty.

An entire academic area of institutional logic has grown rapidly and there is considerable literature on organisational dynamics, and in particular how Boards respond to institutional demands (Greenwood et al., 2012).

Similarly the field of research around ERM has exploded and it is clear from the literature that the introduction of ERM into the field has presented severe challenges to Boards.

Chapter 2 Literature Review Part 3

Behavioural economics and inherent mental biases

A prime area of interest in this research was to recognise that, in assessing risk and reward within the company, Boards are subject to a range of in-built mental biases, referred to in the literature on behavioural economics, which will affect the way they as individuals will be influenced, and by the qualitative and quantitative aspects of risk which they face from time to time.

Camerer (2006, p.1) describes behavioural economics as the “modelling of systematic imperfections in human rationality applied to the study and engineering of organizations, markets and policy. These imperfections include limits on rationality, willpower and self-interest”.

Not much research has been carried out in the field of behavioural economic biases in organisations (Camerer, 2006). The question that arises from this is therefore how Board members, faced with risk, and all with inherent and different mental biases will collectively arrive at a single decision to deal with the risk.

Executive risk taking varies across and within different forms of monitoring, and Boards are likely to exhibit risk seeking as well as risk-averse behaviour depending on circumstances (Wiseman and Gomez-Mejia, 1998).

Risk preferences of decision makers, and hence the behaviour of directors faced with risky decisions is likely to be influenced by the way in which the problems are “framed” (Kahneman and Tversky, 1979). Starmer (2000, p. 338) goes so far as to state that “very minor changes in the presentation or ‘framing’ of prospects can have dramatic impacts upon the choices of decision makers”.

This framing effect can be highly influential in decision making at Board level when issues (relating to risk or any other strategic issue) are presented by individual Board members. This framing effect could alter the outlook members have in terms of their quantitative and qualitative assessments of risk.

In an experiment designed to gauge the discrepancy between “aspirational goal setting” and past performance Lant (1992, p. 641) concluded that companies are likely to base their

decisions on past performance, with a “systematic bias tending towards optimism.” Thus in evaluating risky situations, Boards may tend to be more optimistic than past risky situations suggest they ought to be. Similar systematic biases were noted by Figenbaum and Thomas (1988).

2.6.1 The key human biases

There is a great deal of literature on this area of behavioural economics, which largely makes statements about individuals, but which, taken in conjunction with material on group behaviour, can be extended to biases in Board decision making; and Table 2.3 below (a compilation taken directly from McFadden (1999, p.85) summarises the key human biases which have been observed empirically by a number of different researchers.

2.6.2 Expected Utility Theory and Prospect Theory

Until the seminal paper by Kahneman and Tversky (1979), expected utility theory “EUT” (von Neumann and Morgenstern, 1944) had been widely accepted as a normative model descriptive of human decision making under risk. EUT states that individuals will value risky outcomes by multiplying the probability of the outcome by the utility of the outcome to that individual (Mongin P., 1997). While a normative approach is theoretically appealing and tractable, it is what decisions people actually make when faced with risk and uncertainty rather than how they ought to behave that seems more important.

“Empirical studies dating from the early 1950’s have revealed a variety of patterns in choice behaviour that appear inconsistent with EUT” (Starmer, 2000, p. 336).

In a further major challenge to EUT and normative behaviour under risk, Maurice Allais (1953) highlighted two empirically observed and widely discussed irrational biases, the so-called common consequence and common ratio effects:

2.6.3 Common consequence effect

Given 2 options, people will, contrary to EUT, mostly choose the option which provides more certainty against an option which provides a higher expected return.

2.6.4 Common ratio effect

EUT predicts that given 2 options, with the probability of the payoff under the first option being a constant multiple of the probability of the second option, people will always choose the same option irrespective of changes to the probability of occurrence. Considerable

empirical evidence has supported Allais' (1953) findings which demonstrate that people will behave irrationally and alter their choice of option based on the underlying probabilities (Kahneman and Tversky, 1979; Starmer 2000; Camerer 2003). Kahneman and Tversky (1979) proposed an alternative theory of choice under risk and demonstrated that humans approach choice in which in-built mental biases systematically violate the axioms of expected utility theory. There is some literature on the application of Prospect Theory to group decision making behaviour, and the extent of cognitive bias at Board or company level (Figenbaum and Thomas, 1988). One of the objectives of this research is to identify whether this anomaly exists, against the background of the interaction of Board members and the influence of ever increasingly stringent corporate governance requirements.

2.6.5 Description of Prospect Theory

As seen above, Prospect Theory sets out to explain the anomalies of Expected Utility Theory (EUT), which is why humans do not follow a mathematically logical approach to decisions when faced with risk. EUT supposes that individuals will consistently choose the highest value of a range of probability weighted present values of a set of outcomes. Thus they will be consistently rational in their choice of risky alternatives, irrespective of the circumstances. Kahneman and Tversky (1979) noted that there are "consistent inconsistencies" (the authors description) when humans are faced with risk. Kahneman and Tversky (1979) identify 4 distinctive features of choice under risk:

Risk aversion

Individuals will tend to become risk averse when they have experienced some past gains

Risk seeking

They will tend to become risk seeking when they have suffered prior losses

Loss aversion

Individuals feel the pain of losses more acutely than the elation of a gain. Kahneman and Tversky (1992, p. 303) described this as "losses loom larger than gains", and quantified this ratio as 2.25, that is that the pain of a given monetary loss induces a feeling of discomfort 2.25 times more than the corresponding feeling of happiness for the same monetary gain

Diminishing sensitivity

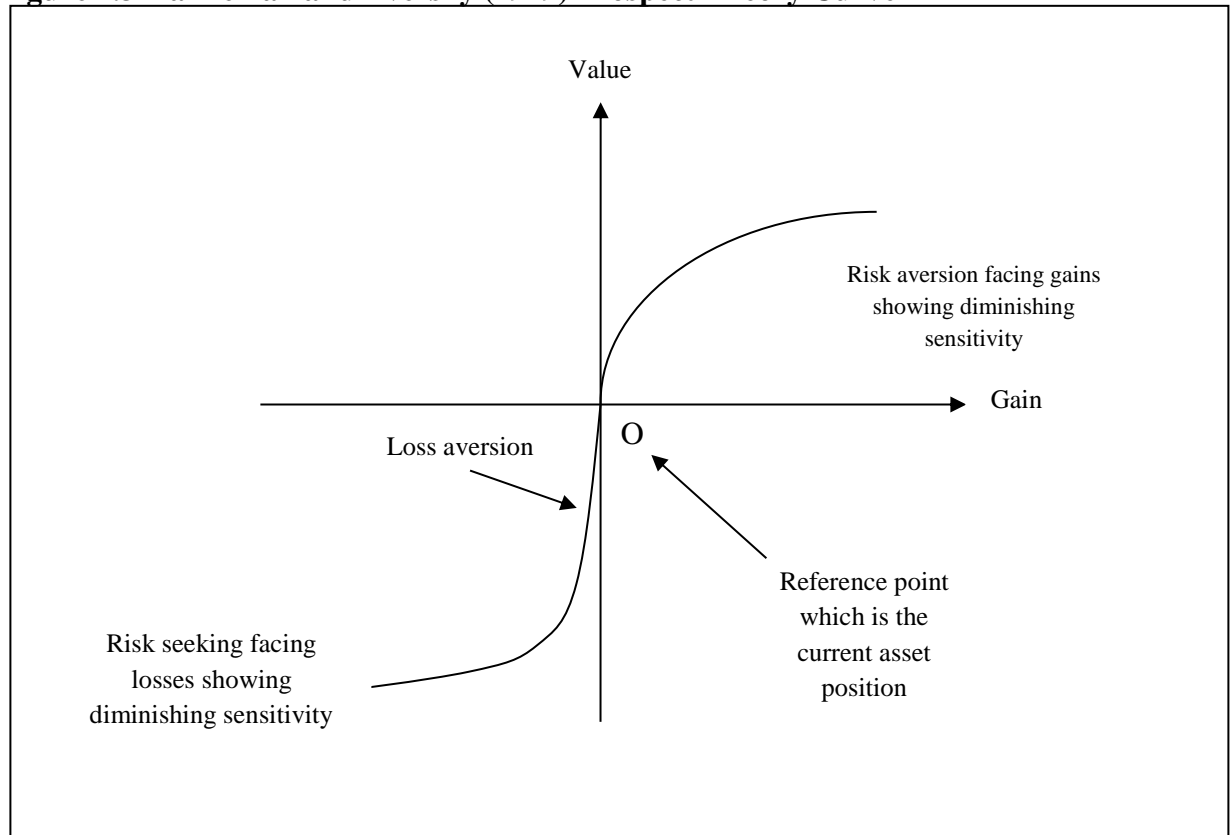
There is a diminishing sensitivity to increasing losses and gains. Thus there is a marginal reduction of value attached to increasing gains and losses. Thus people become inured to increasing gains and losses. For example a person who has just won 100 will attach a far greater value to a further gain of 50, than the same person would if he had just won 1,000,000. The following graph shows the distinctive Prospect Theory curve, with annotations to highlight the features described above.

Table 2.3 A summary of the major recognized and documented cognitive anomalies exhibited by individuals (McFadden 1999, p.85)		
Effect	Bias	Description
CONTEXT	Anchoring	Judgments are influenced by quantitative cues contained in the statement of the decision task
	Context	History and presentation of the decision task influence perception and motivation
	Framing	Equivalent lotteries, presented differently, are evaluated differently
	Promin'nce	The format in which a decision task is stated influences the weight given to different aspects
	Saliency	Subjects are inconsistent in selecting/ weighting the information judged salient to a decision task
REFERENCE POINT	Assymetry	Subjects show risk aversion for gains; risk tolerance for losses; weigh losses more heavily
	Reference Point	Choices are evaluated in terms of changes from an endowment or status quo point
	Endowm'nt Effect	Current status and history are favored relative to alternatives
AVAILABILITY	Availability	Responses rely too heavily on readily retrieved information, and too little on background information
	Certainty	Sure outcomes are given more weight than

	Focal Isolation Primary/Recency Regression Separation Represent'veness Regret	<p>uncertain outcomes</p> <p>Quantitative information is retrieved or reported categorically</p> <p>The parts of a multiple-part or multi-stage lottery are evaluated separately</p> <p>Initial and recently experienced events are the most easily recalled</p> <p>Idiosyncratic causes are attached to past fluctuations, and regression to the mean is underestimated</p> <p>High conditional probabilities induce overestimates of unconditional probabilities</p> <p>Bets are decomposed into a sure outcome and a bet relative to this sure outcome</p> <p>Individuals are likely to avoid choices which may lead to feelings of regret</p>
SUPERSTITION	Credulity Disjunctive Superstit'n Suspicion	<p>Evidence that supports patterns and causal explanations for coincidences is accepted too readily</p> <p>Consumers fail to reason through or accept the logical consequences of actions</p> <p>Causal structures are attached to coincidences, and "quasi-magical" powers to opponents</p> <p>Peoples mistrust offers and in unfamiliar situations question the motives of opponents</p>
PROCESS	Rule Driven Process Temporal	<p>Behavior is guided by principles and analogies rather than utilitarian calculus</p> <p>Evaluation of outcomes is sensitive to process and change</p> <p>Time discounting is temporally inconsistent, with short delays discounted too sharply relative to long delays</p>
PROJECT'N	Misrepres'n	Subjects may misrepresent judgments for real or

	Projection	perceived strategic advantage Judgments are altered to reinforce internally or project to others a self-image
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Figure 2.3 Kahneman and Tversky (1979) Prospect Theory Curve



It is now necessary to consider the relevance of Prospect Theory to the study of risk management in the corporate environment.

Every day, businesses are faced with risk and uncertainty, and Boards are required to develop strategies to deal with this risk. If these natural human biases which have been shown to exist among individuals are similarly endemic at a corporate level, then businesses are not seeing risks for what they are. Thus some further insight may be gained into why companies fail, and if this phenomenon does exist, it may be possible to alert Boards to be on guard, and develop strategies to protect, against these collective cognitive distortions.

2.6.6 Reference dependence and preference reversal

Expected Utility Theory and Prospect Theory assume reference-dependence. This means that the utility or value derived from a set of risky alternatives, or indeed the decision taken by an individual when faced with these risky choices, will depend on the size of the gain or loss relative to their current wealth. Prospect Theory states that individuals become less sensitive to larger gains and losses (diminishing sensitivity). Also, individuals exhibit a form of preference reversal in which they will choose more certain outcomes when faced with gains, but more risky alternatives when faced with losses.

Prospect Theory (Kahneman and Tversky, 1992) however, is “more clearly rooted in psychology than most other theories, which are generally based on ingenious ways of weakening the independence axiom” (the independence axioms assume that people implicitly cancel common outcomes of equal probability in comparing risky choices) which leads mathematically to expected utility and subjective expected utility (Camerer, 2006, p. 8). This means that individuals are able to identify common characteristics among risky choices made up of several characteristics. (Simple example: Prospect A provides a 20% chance of winning a lottery ticket which has a 1 in 10,000 chance of winning \$1M. Prospect B provides a 20% chance of winning 2 lottery tickets each of which has a 1 in 10,000 chance of winning \$1M. Individuals ought to attach the same relative values to A and B as they would to 2 other prospects C and D where C has no chance of winning anything and D provides a 20% chance of winning one lottery ticket.)

Prospect Theory has been tried and tested in numerous settings over 3 decades (Fiegenbaum and Thomas, 1988; Harless and Camerer, 1994), and the results are shown to support strongly the postulates of Prospect Theory, in that firms which are loss making or performing below budget appear to be risk averse, and conversely firms operating above target levels tend to display risk averse strategies (Fiegenbaum and Thomas, 1988).

2.6.7 The basic mathematics of Prospect Theory, the certainty effect and the reflection effect.

In order to describe the way in which individuals deviate from uniformity in risk-taking depending on size of gain or loss, it is necessary to examine the mathematical assumptions of Kahneman & Tversky (1979). The same methodology used by Kahneman and Tversky (1979) will be applied to Boards to establish whether similar cognitive biases exist at a Board level, and how this impacts on Boards' response to risk and uncertainty.

Kahneman and Tversky (1979) postulated that individuals faced with a risky decision will choose a maximizing solution which enhances their value as follows: Let x, x' represent the binary outcomes of a lottery. Let v be a value function which attributes a value to the lottery outcomes. Let p represent the probability of x , and $1-p$ the probability of occurrence of x' . $w(p)$, and $w(1-p)$, respectively represent the probability weighting function which overweights* low probabilities, and underweights* high probabilities. If V represents the value of the prospect, then:

$$V(x, x') = \text{Max} [w(p) \cdot v(x) ; w(1-p) \cdot v(x')] \quad (2.1)$$

**Overweighting/underweighting of probability describes the behavioural response to given probabilities, where individuals will subconsciously attach a higher/lower value to the implicitly or explicitly stated probability of a given event, and use this biased probability in determining their strategy in dealing with the event.*

People therefore systematically tend to distort economic values involving certainty, probability and possibility; and will hence overweight outcomes that are considered certain, compared to outcomes which are considered probable. Thus faced with choice, people will seek a more certain outcome. This is referred to as the certainty effect. When people are faced with choices involving losses, they will tend to reverse their certainty bias, and seek options which provide the lowest expected loss. This is referred to as the reflection effect. Thus people will be risk averse when they consider themselves to be wealthier than their normal status quo level, and will become risk tolerant or even risk seeking when they have lost and are less well off than their status quo position. These 2 processes combine to create the familiar S – shaped Prospect Theory curve shown in Figure 2.3 above, which plots gains relative to the status quo on the x-axis, and attributed value on the y-axis. The curve is concave above the x-axis (to the right of the reference point) reflecting risk aversion, concave below the y-axis reflecting risk tolerance. Immediately to the left of the reference point the curve is steeper than to the right of the reference point, indicating loss aversion.

2.6.8 The independence axiom

Tversky (1972) stated that in order to simplify choice between alternatives, people often disregard components that the alternatives share, and focus on the components that distinguish them. This is referred to as independence. Thus Board members, who for

example enter into a competitive tender process, may tend to distinguish between the probability of success of winning the tender and the expected gain on the project.

Boards may consequently be focused separately on the contract price to improve the probability of winning the tender; and separately will consider the strategy and expected profitability of the contract, once awarded. This form of bias can lead to potentially high risk strategies.

2.6.9 How low and high probability events are construed

A simplification process in the evaluation of prospects can lead people to discard events of extremely low probability and to treat events with extremely high probability as being certain. People tend to be limited in their ability to comprehend and evaluate extreme probabilities, consequently highly improbable events are either disregarded or over-weighted, and the difference between high probability and certainty is either neglected or exaggerated (Kahneman and Tversky, 1979).

Two obvious consequences of failure to recognize low probabilities are failure on the part of Boards to insure adequately, or to recognize that highly improbable events do happen (BP oil spill 2010).

An example of a consequence of treating high probabilities as certainties is where a company commences with the internal planning in anticipation of winning a tender before the final documentation is complete on the basis that the tender award is “in the bag”, with obvious consequences in the event of the failure of the tender to materialize.

Another example of group behaviour is evident in asset bubbles. The top of a bull market, by definition, occurs when the entire set of market participants believe that prices will continue to rise. This herd instinct engenders a high degree of incoherent optimism leading to market participants overlooking downside risks. The apparent high probability of a gain is often treated with certainty, leading perhaps to unexpected losses (in a market crash for example).

Many of the mathematical models developed by Kahneman and Tversky (1979) are based on the decisions taken by the majority of people when presented with these prospects. However, in some experiments the majority was less than in others. This means that a (significant) minority of people make decisions which violate the tenets of prospect theory.

The external observer needs to be wary of falling into the representativeness trap described below!

2.6.10 An example of a Board underweighting high probability events

In 2000 during the dot-com crash Nortel Networks, a company which had traded for over a century and became a computer networking giant with a staggering market capitalisation of over \$300 billion, filed for Chapter 11 bankruptcy protection. Nortel executives never foresaw the impending disaster. The aftermath included an accounting scandal including the overstatement of revenue over several years, manipulated earnings by the then CFO, and resulted in the departure of ten executives and five directors. In their failure to foresee the disaster, the resulting 2 counts of fraud all point to how Boards might behave when faced with uncertainty. In the first instance the Board may have suffered from overconfidence bias, and assumed that the high probability of continued success was a certainty. The subsequent fraudulent activity on the part of highly respected executives is a further example of how executives assume that the high probability of successfully concealing fraud equates to certainty. (New York Times - January 15, 2009, on page B2 of the New York edition).

These human biases evident in the Nortel case are typical of many others (failures of WorldCom and Enron for example) where human bias distorts the probability of events, as predicted by Prospect Theory as well as other research on human biases as outlined above.

2.6.11 Criticism for Prospect Theory, and evidence of its predictability

Support and criticism for Prospect Theory

The postulates of Prospect Theory have been endorsed by an extensive body of literature (Starmer 2000; Wu et al., 2005; Camerer, 2006). Figenbaum and Thomas (1988) carried out an extensive study into the risk attitudes of over 2000 US companies between 1960 and 1979 and consistently found a negative risk-return relationship for companies experiencing below target level returns, and a positive risk- return relationship for companies with above target returns. Thus companies with below target returns, facing losses pursued high risk projects resulting in a negative risk reward ratio, and vice versa. “These results support the basic propositions of Prospect Theory (in companies) and are extremely robust within and across industries and for all time periods studied” (p.85).

However, Bosch-Domenech and Silvestre (2010) demonstrate, in a real money experiment, evidence of risk aversion in the case of high probability losses, which contradicts Prospect Theory and its cumulative version (Kahneman and Tversky 1992). “In decision making under risk, the major distinction appears not to be between the domains of gains and losses, but between the domains of large vs. small money amounts” (Bosch–Domenech and Silvestre, 2010, p.180).

Levy and Levy (2002) claim that the main justification for Prospect Theory is based on the fact the individuals will tend to choose a financially certain alternative which is lower than the expected value of a risky prospect. In their experiments Kahneman and Tversky (1979) required subjects to declare the certainty equivalent of either negative or positive prospects. Such prospects are not common in financial markets. Levy and Levy (2002) consequently rejected the S-shaped value curve due to this artificial framing and bias introduced by the certainty effect.

This work of Levy and Levy was immediately refuted by Wakker (2002) on the basis that they thought, incorrectly, that probability weighting could be ignored; thus Wakker (2002) demonstrated the experiments conducted by Levy and Levy (2002) do in fact support the S-shaped Prospect curve. “Their hypotheses of convex utility for gains is contrary to the diminishing marginal utility assumed in classical analyses, the diminishing sensitivity assumed in Prospect Theory, and virtually all empirical findings of the vast literature on the topic” (Wakker 2002, p.981).

Bromiley (2010) also criticises Prospect Theory on the grounds that the empirical basis for the research relies on prospects which are unrealistic in a business context, and for example ignore current wealth in assessing risk and the incidence of mixed gambles (i.e. those which offer a positive as well as a negative outcome. In this research these factors were taken into account. Bromiley (2010) advocated the use of a multi-factor model involving 5 basic variables as a preferable way of assessing risk aversion and tolerance. The 5 variables were: performance, capacity, aspirations, expectations and risk.

Criticisms of the laboratory techniques used in deriving Prospect Theory

The conclusions of Kahneman and Tversky (1979, 1992) were not based on business applications but on empirical studies using hypothetical lottery style questions based on a modest monthly (Israeli) salary and directed at students. They relied on the “assumption

that people often know [a priori] how they would behave in actual situations of choice, and on the further assumption that subjects have no special reason to disguise their true preferences” (Kahneman and Tversky, 1979, p.265).

It would therefore appear that Kahneman and Tversky’s (1979, 1992) research does not deal directly with the question of how individuals change their value function based on the potential gain and current wealth relationship. This has also not been tested in businesses. That is, where the Board may adopt a different view of value when faced with a risky choice depending on the size of the expected outcome relative to the extent of the company’s resources.

In an attack against Prospect Theory, Nwogugu (2006, p. 452) claims that the methodology and results of Prospect Theory are fundamentally flawed. He claims that the experimental process failed to present the effects of: “order of choices; cognitively induced bias by repeatedly posing the same type of question to interviewees; impact of response time; effect of knowledge on choices; effects of mood; effects of regret and mental states; the effects on the individual of gradually changing the prices, instead of changing the prices randomly; decision makers objectives and changes over time; content/context and gender issues; impact of principal/agent relationship issues; the dynamics of “mixed prospects” ; and the effect of task complexity on the respondents answers” (p.452).

Principally Nwogugu (2005, 2006) claims that the main area of departure from rational economic thought is that for most people value is relative to total wealth; and not gains relative to the status quo. He further asserts that Prospect Theory is essentially the same as utility theory as they “are both based on probability weighted or factor weighted summations of possible outcomes.”(Nwogugu, 2006, p. 453). Semantically, this assertion is true if one considers that Prospect Theory is an attempt to define these factor weightings which Prospect Theory refers to as decision weights. However Prospect Theory attempts to explain these decision weights in terms of behavioural biases, and the S-shaped probability transformation in Prospect Theory “offer[s] significant predictive improvement over EUT” Starmer (2000, p.359).

In a further critique of Prospect Theory, Laury and Holt (2005, p.2) state “while the use of hypothetical payoffs may not affect behaviour much when low amounts of money are involved, this may not be the case with high payoffs of the type used by Kahneman and

Tversky (1979) to document the reflection effect”. Further, (Laury and Holt, 2005) claim that risk aversion increases sharply when real payoffs in these lotteries are increased. Using the same lottery style approach used by Kahneman and Tversky (1979), but with real monetary payoffs, Laury and Holt (2005) demonstrated a reduction in reflection rate by over 50%.

2.6.12 Implications of the techniques used to derive Prospect Theory for its relevance in corporate decision making

It would seem that the decisions faced in a corporate environment are often more akin to the Kahneman and Tversky (1979) type experiments where business are often faced with the choice of a risky project, or staying as they are (certainty). They are also faced with the high probability, low certainty and mixed bet scenarios. It is possible to conclude that businesses may oscillate between:

- utility type functions, relating utility to wealth (or market capitalisation in the case of a company);
- Markowitz (1952) type functions where the utility function has 3 points of inflexion, which can be interpreted as people changing their risk tolerance as the size of potential gain / loss changes relative to their wealth. Thus for low gains, people may exhibit risk seeking behaviour, and for large gains people revert to a risk averse attitude. The reverse situation applies to losses. In a business context, companies may be prepared to gamble on smaller projects, but be risk averse to larger projects. This makes intuitive sense.
- Kahneman Tversky (1979, 1992) value / utility functions depending on the specific circumstances of the decision frame, such as where people view their current position relative to their status quo.

Nwogugu (2005, p. 167) proposes the use of dynamic multi-factor models (“belief systems – which consist of physical, temporal, mathematical, psychological, technological, government and monetary factors that directly influence people’s beliefs and opinions about issues, and thus give rise to probabilities and decision weights”) which apply weights to a series of situation / context specific variables and a range of qualitative and quantitative factors which are known to impact on the risk facing the firm. It could be

argued that attempting to apply situationally relevant probabilities to a number of factors may give rise to spurious accuracy / results.

Kahneman and Tversky (1979) however never stated that their Prospect Theory was intended to describe a conscious cognitive process employed by people faced with risky decisions. By contrast, their model described the outcomes of peoples' decisions when faced with risk, and a formula for describing the nature and extent of this bias.

Kahneman and Tversky (1979) analyse decision making under risk. Businesses too are faced with uncertainty (See Glossary). Business managers are not always provided with a clear set of prospects with probabilities and clearly quantified potential gains. In this regard Schmidt et al. (2008) advanced Prospect Theory (referred to as PT3) to deal with uncertainty (as opposed to risk in which the probabilities of the events are known a priori). In the PT3 model the reference point is uncertain, and thus provides a predictive model for behaviour of individuals faced with lottery style prospects in which the probability of outcomes is unknown. PT3 may thus be considered to be more consistent with real life, business type, situations in which the Board (say) is unsure of the probabilities of the various risky alternatives which face the company. Due to the nature of uncertainty, it is difficult to create a series of questionnaires which provide measurable results which could be used to measure the degree of bias based on uncertain events, as it would be necessary to state "how uncertain" such events might be. It must be emphasised that Prospect Theory and PT3 are descriptive models which explain empirically observed behaviour, and do not purport to replicate the cognitive processes employed by individuals in dealing with risk and uncertainty.

Hodgkinson et al. (1999) reports on field studies involving the impact of biases and heuristics (rules of thumb) on strategic cognition relating to decision making under uncertainty, in which the framing bias (where small changes in the way problems are presented affects their perception) leads to reversals of preference as predicted by Prospect Theory.

Other studies have dealt with risk and return issues in the corporate environment. Bowman (1980) for example concluded that in a corporate environment, risk taking, and the consequent returns, were negatively correlated. The risk attitude of the Board may

influence these risk return profiles, and firms under threat (and hence facing losses) are likely to be more risk seeking, (Bowman 1982, 1984), as predicted by Prospect Theory.

Boards are also affected by the nature of their incentives (Wright et al., 2007). They tend to become more risk seeking based on the extent of the ratio between their share options and their fixed salary components. This behaviour seems counter intuitive to the risk averse nature of Board behaviour predicted by Prospect Theory.

Figenbaum and Thomas (1988) attempted to explore the role of attitudes towards risk in the management of strategic risk and thus to understand more fully Bowman's (1980) risk return paradox, which is that contrary to intuitive logic, businesses often violate the risk / reward relationship and will choose high risk projects which offer low rewards.

In summary, there have been many attempts, in the form of a number of models, to explain how individuals deal with risk and uncertainty. It would appear that Prospect Theory has been the subject of intensive scrutiny and the theory has been extensively applied across a large number of applications over more than 3 decades since the first publication of Prospect Theory (Kahneman and Tversky, 1979). The consequences of this theory for Board members of companies are that, at times of profitability, Board members will generally be conservative and seek certainty. This could result in potentially profitable opportunities being discarded. However, when faced with losses, Board members will tend to become risk seeking, and this could lead to Boards considering potentially high risk opportunities, at a time when they ought to be more prudent. The research will explore whether Prospect Theory applies to companies, when faced with risk and uncertainty. In a later section an example of Prospect Theory is considered in a company environment.

2.6.13 The relevance of Prospect Theory in business applications

As stated above, the main conclusions from Prospect Theory were derived from empirical studies based on individuals' responses to lottery style questions involving hypothetical payoffs. This section explores the relevance of Prospect Theory in a group or business context.

Figenbaum and Howard (1988) carried out extensive research to explain Bowman's risk return paradox (the relationship between risk and return was negatively correlated in most industries studied by Bowman (1980)). Using extensive data on over 2000 US companies, between 1960 and 1979, Figenbaum and Howard (1988, p.97) arrived at results which

robustly supported the propositions for Prospect Theory. They demonstrated that “when a target Return on Equity (ROE) value is introduced at either the firm or industry level, risk and return are negatively correlated for below target firms, and positively correlated for above target firms regardless of the period or underlying conditions.” This means that when the gain or loss is measured relative to ROE, firms that are operating below target and consider themselves to be facing losses, will tend to be taking higher, unrequited risks.

Overachieving firms (i.e. those facing positive prospects) will on average be taking lower risks than their performance would suggest. These results confirm the behavioural assumptions of Prospect Theory.

In terms of specific applications involving Prospect Theory there is also a considerable body of literature. Prospect Theory has been used to explain many of the observed paradoxes or behavioural anomalies in the financial markets. Some of this work, in terms of financial applications has been summarised by Han and Hsu (2004), as set out in Table 2.4.

Table 2.4 Summary of Prospect Theory applications		
Phenomenon	Author	Description
#Portfolio choice	Han and Hsu (2004)	Investors will hold sub-optimal portfolios in violation of expected utility theory
#Disposition effect	Thaler (1985)	Investors hold onto losing stocks for longer, and sell winners earlier, than is in their best interests to do
#Home bias	Stracca (2002)	Prospect Theory agents who are sensitive to losses will prefer to hold fewer (familiar home based) stocks that holding a more efficient diversified portfolio
#Equity risk premium	Banartzi and Thaler(1995)	The loss aversion feature of Prospect Theory, together with the mental accounting and narrow framing biases are used to describe why investors overweight the returns on equities relative to more secure fixed interest securities
#The volatility puzzle	Barberis, Huang and Santos (2001)	Prospect Theory is used to demonstrate why equity prices are much more volatile than the underlying earnings
#Initial underpricing of	Loughran and Ritter (2002)	Sponsors behind new stock issues tend to be loss averse, as predicted by Prospect Theory, and tend to anchor their perception of the true value of the stock to

IPO's		the value pertaining at the filing date with the listing authority
#Long run underperformance of IPO's	Barberis and Huang (2004)	Returns from IPO's tend to be positively skewed, due to the often more risky nature of their businesses relative to longer established companies. Cumulative Prospect Theory agents tend to overweight the tails of the distributions they seek, and will be attracted to IPO's, forcing up prices, which result in their eventual underperformance.
*Banking investor protection and earnings management	Shen, Chih (2005)	Prospect Theory may apply as there appears to be a positive relationship between risk and return for high earning banking groups, and a negative relationship between risk and return for underperforming banks.
*Explaining investor behaviour when firms face liquidation	Kyle et al.(2006)	Prospect Theory is used to explain the anomaly of liquidation decisions on the part of owners who are willing to maintain a risky project with relatively low risk, and liquidate it when it breaks even. On the other hand companies will tend to liquidate projects with a relatively high risk outlook if the projected profits rise or drop to the breakeven point.
#Summarised from Han and Hsu, 2004		
*Those items marked are studies conducted in respect of organisations		

Yazdipour, Constand (2010, pp. 96-97) argue that in the area of financial distress and failure it is not possible to focus purely on business operations to explain the reasons, but also to include human, managerial and decision making issues to explain corporate failure. They propose that human biases could provide more powerful success / failure predictability for small and medium sized enterprises. Their article is particularly relevant to the subject, and supports the conclusions of this thesis which highlight the systematic bias of Boards when faced with risk:

"... findings from the fields of cognitive psychology and neuroscience have fundamentally changed the way we now look at how financial decisions are made. An entrepreneur may assign a low risk assessment to an otherwise high risk project and subsequently take on a riskier project than the potential return justifies." (p.96).

The following comments from the same article are also relevant to this study:

“the very powerful affect heuristic has been defined as a feeling state, such as “goodness or badness” when one faces an investment opportunity....and can be viewed as a quality, such as acceptable or unacceptable, when associated with a risky business venture....and has been able to explain the otherwise peculiar negative relationship between expected risk and expected return or gain in investment situations.”(p.97)

This thesis will show that Boards tend to underweight probabilities, and this is consistent with the assertions in the first quote. The final clause in the second quote indicates that the affect heuristic, which is essentially a mental process for arriving at an appropriate solution, explains why higher expected risks are associated with lower expected returns. In this context Boards will therefore conservatively value projects where the outcome appears highly certain, in line with the empirical findings of this thesis.

2.7 Advances in Prospect Theory

Kahneman and Tversky (1979) proposed Prospect Theory which has formed an important cornerstone of this research, in providing a basis for quantifying the degree of risk aversion and risk bias for Boards. Prospect Theory provides a descriptive model for behaviour under risk. Chiefly Prospect Theory proposes a probability weighting function which predicts individuals' distortion to given probabilities, and a value weighting function which demonstrates the value people attach to losses and gains. For a given prospect it is then possible to predict the value attached to the gain using the weightings from the probability and value weighting functions.

In subsequent developments (Kahneman and Tversky, 1992) “Cumulative” Prospect theory was developed in which rank-dependent decision weights were used to predict the values people would attach to prospects using the same probability and value weighting functions as before.

Schmidt, Starmer, Sugden (2008) proposed a third-generation Prospect Theory (PT3) in which the reference point (i.e. the origin of zero gain or loss) is uncertain. There are other features built into PT3 such as reference dependence where the preferences or weights attached to prospects are state dependent. However in all versions of Prospect Theory gains and losses are defined relative to a reference point; and a value weighting function, is used to transform these values into indices, to which the corresponding transformed value from

the probability weighting function is applied to determine value. As this research was primarily preoccupied with the results of the value and probability weighting functions, subsequent advances in prospect theory do not alter the validity of the techniques used here. In any event this research simply uses parts of prospect theory to assess risk aversion and risk bias.

van de Kuilen, Wakker, (2011) describe a parameter free method for measuring the weighting functions for Prospect theory and rank-dependent utility. This mid-weight method calculates midpoints in the weighting function scale. The method allows more than two non-zero outcomes (i.e. prospects of the form $(P_1:X_1; P_2:X_2; P_3:X_3)$, where P_i is the probability of the i^{th} outcome with payoff X_i), whereas the data derived in the Risk Bias Questionnaire (Appendix B) was of the binary form $(P_1:X_1; P_2:X_2)$. One suggestion for further research might be to test Boards' outcomes using this technique. Real life situations involve multiple outcomes and the results would be strengthened if a multi-outcome approach were used.

In this thesis, the technique used in the analysis of the results of the Risk Bias questionnaire, was to choose zero as the reference point to establish the difference attributed to gains and losses as shown in Figure 5.5. This choice was made in line with the original basis of Prospect Theory (Kahneman and Tversky, 1992). However, businesses may have other reference points (Koop, Johnson, 2010) such as sales targets, return on capital or achievement of financial budgets. In a financial regulated environment such as BINS for example, the objective may be a solvency based target. Thus the choice of reference point is important and may substantially change the results.

Schmidt, Zank (2011) argue that the reference point ought to be determined from the data itself (endogenous reference point) by analyzing the point at which the behaviour of the respondent changes, by noting changes in the levels of sensitivity to risk. In this research, as shown in Figure 5.4, it is difficult to detect any point along the (smooth) curves at which behaviour can be said to change. It would however be interesting to conduct a larger study to assess the impact of Boards decisions on a change in the reference point from say a breakeven point (as was assumed in this research), to the achievement of the budget. In this research as can be seen from the last 2 questions in the Risk Readiness Questionnaire there is little evidence of behavioural change around the budget point.

2.8 Summary Chapter 2 Literature Review Part 3

So far this Chapter 2 Literature Review Part 3 has dealt with the large number of human biases which influence the way humans perceive and deal with risk.

The biases demonstrated by Maurice Allais (1953) who won the Nobel prize for economics for his famous paradoxes (common ratio effect and common outcomes effect) challenged for the first time classic Expected Utility Theory developed by Daniel Bernoulli in the 17th Century and which had stood the test of time as a model of choice for over 2 centuries.

This revelation sparked a flurry of experiments which supported the view that human bias was prevalent, and this gave rise to a large number of experiments which identified a range of irrational cognitive biases described in Table 2.3 above.

Kahneman and Tversky (1979) developed Prospect Theory to provide a descriptive theory of choice under risk. Their experiments were based on individuals, and not groups. Many supporting experiments across a range of business applications confirmed the validity of their theory.

The purpose of this research is to examine how Boards deal with risk. There is not much research into whether Prospect Theory provides a descriptive basis for how Boards and corporate entities deal with risk and uncertainty.

Nwogugu (2005, p.151) highlights this issue and criticises Prospect Theory (PT) and Cumulative Prospect Theory (CPT) on the basis that the experiments were conducted on individuals, and therefore “PT/CPT do not explain group decisions ... and that decisions are rarely made in the contexts in which Kahneman and Tversky’s research was performed.”

The research will therefore explore the pervasiveness of human biases postulated in Prospect Theory, in the way Boards deal with risk and uncertainty and attempt to establish whether indeed human biases are prevalent in Boards’ decision making processes.

Chapter 2 Literature Review Part 4

Literature review synthesis establishing links between risk assessment, Board decision making and risk regulation

Much effort and energy has been devoted to the discussion around effective institutional logics relating to corporate governance and ERM.

Firms suffer from an increasing level of institutional pressure (Greenwood et al., 2012) to apply corporate governance principles, and firms have great difficulty in making sense of their risk (Weick, 1995). Institutional pressure results in varied responses from different companies (Oliver, 1997), and organisations attempt to conform to institutional pressure in order to achieve legitimacy and ensure survival (Forgues et al., 2012).

The areas of institutional pressure to be researched in this thesis relate in general to corporate governance obligations required of companies, and in particular the area of integrated risk management imposed on companies by regulators, referred to as enterprise risk management (ERM).

(Hagigi et al., 2009, p.294) “There has been a considerable body of research in the area of risk management. While integrated risk management has been discussed by several researchers, most of the empirical analysis did not use this approach. Many studies by academic practitioners have examined the various elements of risk; however most of them have emphasised the particular aspects of risk, while overlooking any interrelationship among these elements [ERM]. Future research should attempt to integrate the effects of multiple elements of risk and incorporate the behavioural aspects of risk [management]”.

However in terms of this integrated risk management, the literature relating to ERM is “very rare” (McShane et al., 2011, p.642; Beasley et al., 2005). Little is known about why some companies adopt ERM measures, and others do not (Beasley et al., 2005, p.522).

Various proxies have been used for the level of ERM to assess its impact on firm performance; a single factor used as a basis to assess the level of compliance may lead to spurious results. In this research many aspects of compliance have been researched such as level of reporting, the degree to which various risks have been identified, the role of risk in strategic decisions etc. A questionnaire was therefore created to assess the many aspects of

regulatory compliance based on the work of Beasley et al., (2010, 2011, 2012, 2013). This approach will be discussed further in the methodology section.

The literature emphasises that a silo approach to risk management has proved ineffective, and that “an integrated approach to risk management will enhance efficiency and reduce risk ... and that such analysis should incorporate the correlations among the growing number of exogenous elements of risk, and the often ignored behavioural effects of managers in decision making in the[ir] risk management strategy (Hagigi et al., 2009, p.293). Further, “human behaviour is an important source of ‘intellectual failure’ within the ERM model which should be addressed by regulators, senior management and Boards” (Power, 2009, p.854).

Arena et al. (2010, p. 673) states that there is “evidence supporting the holistic research approach that considers the behaviour of people and their interrelations, along with the technological solutions as they occur in historical events and cycles”.

Finally, Yazdipour, Constand (2010, pp.96-97) argue that in the area of financial distress and failure it is not possible to focus purely on business operations to explain the reasons, but also to include human, managerial and decision making issues to explain corporate failure. They propose that human biases could provide more powerful success / failure predictability for small and medium sized enterprises.

Power (2007) presents an account of ERM as a rational and easily integrative process into the firm. Regulatory structures on the other hand require a high degree of process design and implementation which impacts the entire field. ERM is couched in technical terms. There is a prescriptive set of processes to follow, without considering the “specificity of organisations” (Arena et al., p. 661). Thus businesses are left to their own devices regarding implementation.

2.9 Literature review leading to the research question.

In terms of operational and field level changes there is the possibility that firms introduce ERM “merely as a compliance device” without investigating the enterprise wide overhaul of risk management systems and incorporation into the business process (Arena et al., 2010, p.661).

As stated firms respond differently to institutional pressure, “future researchers should examine the effects of a broader range of organisational consequences associated with institutional isomorphism..” so that research into the effects of corporate governance on risk management appears to be a gap in the literature as advocated by Oliver (1997, p.118).

It is therefore important to understand whether firms buy into the philosophy of ERM, or regard it as an unnecessary imposition which requires attention, and “to gain a fuller appreciation of the nature and consequences of incompatible pressures on organisations, and how organisations cope with tensions between ‘institutionalised rules’ and ‘efficiency criteria’ (Greenwood et al., 2011, p. 320).

Further research (Greenwood et al., 2011, p.332) “should appreciate that a multiplicity of logics are in play in any particular [organisational] context [and the research] should be more explicit about the justification of which logics are incorporated into the analysis”.

Inherent individual human biases cloud peoples’ perceptions of risk and uncertainty, and lead to choices which are not in line with expected utility theory. Irrational behaviour is the terminology used in the literature to describe these mental biases. In particular Prospect Theory suggests the people will tend to underweight high probabilities, overweight low probabilities, will be more sensitive to losses than gains, will be risk averse facing gains, and risk seeking facing losses (Kahneman and Tversky, 1992). However the literature is light on how Prospect Theory is likely to affect groups, or Boards in particular.

2.10 Literature summary and synthesis

The literature review has highlighted many aspects of risk management within companies. The cardinal areas of risk management seem to be:

- The nature of institutional logics in the form corporate governance legislation imposed on Boards by regulators;
- The extent to which Boards are compliant;
- How Boards make sense of risk within the internal and external environment;
- How individuals are innately biased when faced with risk and how these individual biases translate themselves into group bias;
- How Boards interact as a group in dealing with strategic issues, and consequently how Boards as a group respond to risk and uncertainty.

In considering the structure of the knowledge base, much of the complexity and spread of knowledge can be attributed to communication within the firm, and the degree of understanding by those who receive the information. Developing knowledge and understanding of the risk issues which face the company is highly complex.

2.11 The Research Gaps

The research gaps as stated above are therefore to understand the impact of multiple institutional and field based logics on the firm. In specific terms this research will focus on corporate governance and ERM, and the reasons why Boards construe their risks differently in respect of their corporate governance and ERM obligations. There seems to be no theory why Boards are required to conform and yet are deliberately non-compliant. The research will also focus on field based issues such as the nature of the company, and the composition of the Board and the influence of behavioural factors on how the Board construes and makes sense of its risk.

Chapter 3. Research Methodology

3.1 Introduction to Research Methodology Chapter

This Chapter deals with the many and varied issues relating to the choice of methodology used in the pilot study as well as the main analysis.

For ease of reference the aims and objectives of the research are summarised below, together with a summary of the techniques used to elicit relevant data. The reasons for these techniques are dealt with below.

3.1.1 The aim of the research is:

To examine the reasons why Boards, in spite of strict corporate governance guidelines, deal with the myriad risk issues facing the company, to different effect, in developing strategies to deal with enterprise risk management.

3.1.2 The objectives of the research are shown below, together with a summary of the techniques to be used to answer the questions.

O1: To examine to what extent Board members of companies which apply corporate governance regulations are liable to human bias in risk estimation. The existing quantitative and qualitative interview (Appendix B questionnaires (Risk Readiness; Risk Aversion and Risk Bias)) will provide answers to this question.

O2: To examine to what extent Boards which are less subject to individual human biases are more effective in developing strategies to deal with ERM. It will be necessary to use RepGrid techniques to elicit information relating to risk levels of risk readiness and a scorecard to assess levels of effectiveness to deal with ERM. Levels of risk readiness will be compared with levels of human bias (Appendix B questionnaires (Risk Readiness; Risk Aversion and Risk Bias)).

O3: To investigate to what extent Boards that adhere to corporate governance are more effective in developing strategies to deal with ERM. It will be necessary to use RepGrid to elicit information relating to risk levels of risk readiness and a scorecard to assess levels of effectiveness to deal with ERM. Levels of risk readiness will be compared with measures of corporate governance implementation (Appendix B Questionnaires (Risk Readiness; Risk Aversion and Risk Bias)).

O4: To examine the ways in which the estimation and personal construing of risk differs between highly compliant and less compliant Boards. The Appendix B questionnaires (Risk Readiness; Risk Aversion and Risk Bias) and the elicitation of information from the RepGrid interviews and a scorecard was used to gauge whether Boards would become more aware of their risk exposures and obligations and hence more effective in implementing measures to identify and mitigate risk.

The techniques adopted and data collection methods used will now be discussed in full detail.

3.2 Chosen Research Methodology Summary

This research was mainly about the perceptions individual Board members have about risk, and the degree to which they were subject to individual human biases, in spite of the presence of an onerous regulatory framework, which ought to minimize risky choices. Board members are subject to a large number of influences such as the need to develop the business, to deal with unexpected surprises which constantly arise from the internal and external environment, regulation, pressure from the various stakeholders of the company and so on. At the same time Board members have their own personal aspirations, fears and cognitive biases. In order to understand fully the outcome of all these factors on their decisions it was necessary to draw on well-grounded methodologies which have been extensively employed in similar research. The first of the three main objectives was to understand the over-and under-estimation of risk amongst Board members. In order to achieve this objective, the principles of Prospect Theory (Kahneman and Tversky, 1979) which deal with human behaviour under risk were applied. The second objective was to examine the reasons for this behaviour in individuals' thinking and for this the principles of sense-making (Weick, 2001) and Personal Construct Theory (Kelly, 1955/1991) were utilised. The third objective of the main study was to compare the difference in views held by 2 distinct intact Boards, one of whom was selected on the basis of strong* regulatory compliance in the area of risk management, and the other on the basis of weak regulatory compliance. (**A strongly compliant Board can be considered to be a Board which has implemented a carefully structured risk management process according to the various guidelines laid down by the relevant legislation governing that company in all its various*

forms, and in addition to which it actively assesses and manages its risk and deals with risk issues in a systematic way).

In short, the research proceeded in 3 main steps:

- A description of the behaviour of the chosen respondents when faced with risk choices, principally using the techniques of Kahneman and Tversky (1992).
- An examination of the ways in which managers make sense and construe this behaviour using the RepGrid, a Kellyan (1995/1991) constructivist technique.
- An analysis of the feedback from the Boards after being presented with the results of the analysis.

The research therefore adopted a mainly constructivist field-based approach.

3.2.1 Epistemological and Ontological Issues

There are innumerable reasons and causes for the particular risk profile of an organization, such as market risk, natural disasters, financial risk and so on. In interpreting and making sense of their risk environment, Board members attempt to synthesize a vast number of continually changing internal and external factors. In this research there was an attempt to understand why Boards behaved as they did when trying to make sense of their risk issues. In attempting to choose a research paradigm, the following main factors were relevant to this research.

The research orientation

In making a decision as to the most appropriate research orientation to pursue (hypothesis or exploratory, single or multiple cases), and to decide where on the research orientation matrix this research lies, the following issues were relevant:

This research was exploratory, and required a close understanding through interviews and questionnaires of the processes at work when Boards make decisions on risk issues. The study encompassed several Boards, resulting in a multiple-sample approach. The Researcher recognized that it was difficult to arrive at blanket theories about enterprise risk which encompass all types of business, in all circumstances, so that an indicative approach

made sense to the current research, and possibly provided an insight into how risks are dealt with in the wider corporate population. The plan was to engage in conversation with members of Boards and get to understand their innermost thoughts and views of risk, how they dealt with it and why. The orientation was therefore towards an ethnographic approach in which the researcher became embedded in the thoughts and mental processes of the Board around risk matters. A pilot exploratory study was conducted to test the proposed methodology; Quadrant C defined the research orientation as shown in Figure 3.1 below:

Figure 3.1 Research orientation matrix

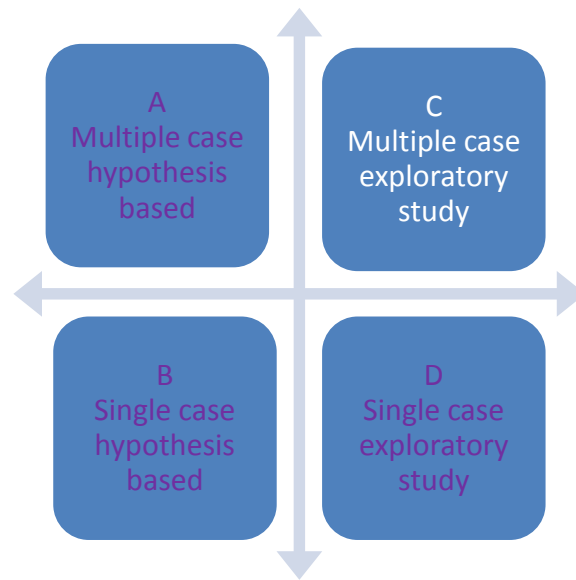


Figure 3.1 Modified from Introduction to Business Research, Volume 1, Heriott Watt University, Roberts et al., 2005.

In the main study it was proposed to conduct a comparison between 3 intact Boards, and examine why and how they construed their risks differently. This led to the testing of various hypotheses, so that the research orientation shifted towards the middle ground between A and C.

The following discussion considers the relative benefits of the 2 main alternative research paradigms.

The positivist paradigm

Positivism pre-supposes that there are independent causes leading to observed effects. While this research is concerned with establishing causal links between certain variables, such as whether the degree of regulatory compliance adopted by a company influences its effectiveness in managing risk, there was greater focus in this research with why this happens, and not so much with the degree to which this relationship exists. There was an attempt therefore to make sense of a highly complex business environment, managed by complex individuals, all of whom have differing perceptions of the perceived realities in which their businesses operate, and all of whom are subject to a large number of cognitive biases. A positivist approach was deemed less conducive to dealing with this complex changing environment with unstable variables and disequilibrium. When considering how a Board may behave, or operate collectively to make decisions regarding risk, it is difficult to attempt to explain such behaviour in such a complex situation- in terms of a convenient set of variables in a causal relationship that is simple enough to be inspected and tested- bearing in mind that the relationship may be moderated by different factors in different companies, different industries, and over different time periods and changing economic conditions.

The constructivist paradigm

By contrast, the epistemology of constructivism is grounded in pedagogy. Constructivism is a model of learning, the process by which knowledge is represented and gained. People are sensitive to external stimuli, recognized or unrecognized (Richardson, 2003). They internalise their experience, and begin to recognize these stimuli, learn from, them and use them to deal with new situations. This on-going iterative process is the way humans may learn to solve problems. Past experiences provide mental techniques for dealing with new perceived problems, and for making sense of the environment (Weick 1995, 2001).

Constructivism as a research model is more concerned with *why* certain observed causal links might exist. It relies on a much deeper and richer understanding of the forces underlying observable causal connections, and provides a framework for delving into *how* decisions are made, and *why* they are made. This research sought to understand how Boards construed their risk obligations, and why they adopted the processes they did, in developing strategies to deal with these uncertainties. In trying to make sense of this extremely complicated and rapidly changing environment it would be wonderful to be able to identify

a series of universally applicable causal links which would provide a realisable means of predicting how and why Boards might behave in certain circumstances – a sort of utopian quantum physics notion of a Grand Universal Theory of business risk, which combines all the laws of risk (in this thesis) in the business universe. Unfortunately in business there are so many variables, all changing rapidly, and overlain with the unpredictable and changing decisions and human biases of management that at best it may only be possible to understand why certain decisions regarding risk situations have been taken in a more closely defined set of circumstances; it may never be possible to predict, based on past experience, how and why risky decisions are made in all circumstances, taking into account all the relevant variables.

The constructivist model for understanding and seeking answers to behavioural patterns can be used to understand what happens in a small set of circumstances. One can investigate, in this thesis for example, how a risk averse* Board may behave differently from a risk tolerant Board; and can seek to understand how and why it happens in these set of circumstances, and that may provide an understanding that may be applicable, and can be subsequently tested for, on a wider scale. In this way the knowledge base of risk is enhanced.

**In this context a risk averse Board will be inclined towards a prudential approach in assessing risk, will be highly systematic in the analysis of such risks, and will adopt a cautious approach to a solution involving a risky choice. In particular a risk averse Board will choose the option with a high probability of a low gain as opposed to a low probability option with a high potential gain; and vice versa for a risk tolerant or risk seeking Board.*

In this research certain causal links were identified, and there was some evidence that they may exist, and these links were tested as part of the validity exercise. Quantitative and qualitative techniques were used to elicit information and to evaluate, analyse and cross-link the various results of this research in identifying relationships and patterns within the current circumstances and sample base. While this research produced **indicative** results based on the selected sample, they may have provided some insight into how and why these relationships may apply in other similar, or even different, circumstances.

The issue of the degree of risk tolerance / aversion, and the extent of cognitive bias at a group level are variables that were quantitatively assessed, and these variables formed an important basis for understanding Board behaviour.

Summary of the differences between positivism and constructivism

A summary of the salient differences, taken from Table 3.1, Jankowicz, 2006, is shown below in Table 3.1.

A question of issues versus variables

The first comparison in Table 3.1 highlights the distinction between constructivism and positivism in terms of the way phenomena (in our case phenomena relating to enterprise risk) are construed by Boards. When faced with risk choices, in seeking to make sense of their internal and external environment, Boards will ask questions relating to the issues around risk, how it arose, its implications and ramifications, and how to go about minimizing or removing its impact, taking all the necessary factors into account. There will be no direct immutable link between variables contributing to risk which can be applied to its mitigation in a mechanical sense. Boyle's Law, which links pressure, temperature and volume of a gas, describes one of the most elegant examples of scientific phenomena which can be linked directly. For any given change in one of the variables (temperature for example) of a gas will result in precise and predictable change in the other 2 phenomena, pressure and volume. And, more surprisingly, the law applies perfectly to all gasses. As discussed above, no such law relating to enterprise risk is possible, as there are too many variables, both internal and external, faced in the corporate environment. Furthermore,

Table 3.1 The basic assumptions of positivism and phenomenology (constructivism) (based on Table 3.1 Jankowicz, 2006)	
Positivism	Phenomenology (constructivism)
Phenomena can be analysed in terms of variables	Phenomena can be summarised in terms of issues
Data can be collected by a dispassionate outside observer	Data are collected by participants and by outside observers, all of whom have varying degrees of

	involvement and detachment
Given evidence, we are always capable of distinguishing what is true from what is untrue, and are therefore enabled to agree on the real reasons for things if we wish to do so	Truth can't be determined in any absolute way; we are capable of using evidence to work towards a consensus, but must sometimes agree to differ, and sometimes conclude that the truth is undecidable
To develop theories that validly explain phenomena	The purpose of enquiry is to gain sufficient understanding to predict future outcomes
Once such theories have been developed sufficiently, we should seek to apply them for productive purposes	There is no need to apply theories; understanding and prediction are already theory-in-action, being theories-from-action

there is unlikely to be unanimity within and across Boards, as to which variables constitute risk to the company, and the degree of risk which each variable poses.

There is a further issue, which can best be highlighted by asking the following question: If Board members themselves are not in search of a law relating to risk, should we try and do so? The sheer number of internal and external variables, their changing influences within and across companies and the difficulties of assessing their probabilities and impact, and finally trying to identify the degree of dependency of each risk on every other risk renders this task impossible.

In business, there is only at best limited control over certain variables, gleaned from experience. Boards will ask “What are the issues relating to the risks we face?”; and “what is our best strategy to deal with them?”. This research therefore focused mostly on issues, and variables when possible to identify them, but mainly the study was about issues.

Consideration of the 4 main research methods (Summarised from Jankowicz, 2006)

The main research methods can be split into 4 main areas:

Interpretivist method: in which ethnography via directed questions, questionnaires and biographical techniques are used to make explicit judgments about the data to discover whether past issues and events can be used as predictors.

Survey method: in which a standard set of questions is completed by a relatively large group of people which represent some larger population, in order to explore issues largely in the present.

Experimental method: in which, by way of experiment, there is a focus on variables rather than issues.

Case study method as our preferred method: Yin (1984, p.23) defines the case study research method: “*as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used*”.

In this thesis the case study method proved to provide a powerful means to understand how Boards dealt with risk and uncertainty, and provided a basis for a detailed analysis of the complex issues they needed to grapple with in order to arrive at risk management strategies; thereby providing a basis to make sense of some of the complex linkages and relationships between certain risk phenomena.

It is possible to criticize the case study method for producing spurious results based on small sample sizes and researcher reactance. In this study in order to improve validity and generality several companies were researched and 4 different techniques were used to elicit data. It is worth dwelling for a short while on the reason for choosing several companies as part of this case study. Clearly in making the choice of suitable Boards there was no possibility that they would, between them, display all the characteristics of the risk universe. The quest was to identify whether there was a difference in the way a small number of Boards dealt with their risk. If it were possible to establish how and why, for a small group of Boards, the reasons for their different approaches to risk, then it may be possible to suggest certain causal relationships which may be tested as part of another study. In short, by replicating the study across multiple samples, it was possible to strengthen the conviction that such causal relationships exist, thereby improving validity of the conclusions which were drawn (Dooley L.M., 2002; Tellis, T., 1997; Yin R.K., 1981).

Reports on case studies from many disciplines are widely available in the literature, see Appendix E 2 below.

The quantitative-qualitative issue in this research

As stated earlier, this research was grounded in the exploratory multiple case study quadrant of the research orientation continuum as shown in Figure 3.1 above. In terms of the quantitative-qualitative divide, the research utilized both elements to gather data. While this research is phenomenological, both quantitative and qualitative analyses were used in this research. The quantitative data will be used where possible to provide strong statistical support to the qualitative observations. This will be particularly useful where we are trying to measure *the level of risk readiness*, and where we are interested in the *extent of cognitive* bias of the companies engaged.

The RepGrid technique is way of describing the meaning a person has for a topic as represented by a set of elements. Constructs that describe the qualities being used (qualitative) and the ratings that position the elements on those constructs (quantitative) are elicited from individual members (of the Board in this study). From this data it was possible to understand and measure how Boards responded, as they did, to risk, and why. The data from RepGrid was used to understand reasons behind any observed causal links.

3.2.2 Research Design, and selection of companies to be analysed

This Section relates to the choice of company, the choice of data, and why the data chosen was relevant to this research.

The research level was initially exploratory with a method based around an inductive, comparative, multiple case study design structured in order to identify indicative causal links. Verbal questions were directed at Board members concerning the risk readiness of their companies, their attitudes to risk and how they construed risk. In addition interviewees were required to complete a written qualitative and quantitative questionnaire designed to provide data on their risk readiness and the extent of their propensity to assume risk (See Appendix B questionnaires Sections 1, 2, 3). Explicit judgments were made about the data based on the themes of the 2010 report (Beasley et al., 2010), and a semi-ethnographic approach was used to elicit information from members of the Board.

Specifically, the design hinged on a comparison between the differences in views held by 3 distinct Boards, 2 of which were selected on the basis of stronger regulatory compliance in the area of risk management, and the other on the basis of weaker regulatory compliance.

While the choice of the above “polar” comparison between highly and weakly compliant firms seemed obvious at that stage, other interesting polarities designed to test the effect of other variables or to test the influence of other factors by means of systematic comparisons – referred to as “replication”- were expected to arise during the course of the research and highlight other important aspects of the research (Yin 2009).

Each of the companies selected agreed to make their executive team available, plus a number of their non-executive directors. Where possible, members of the top management team were selected. The assessment of the level of compliance was based on the Risk Readiness questionnaire (Appendix B). This meant that it was not possible to assess the level of compliance a priori.

Details of the 3 companies chosen are as follows:

- BINS, an insurance company subject to the regulations laid down in the South African Short Term Insurance Act, and regulated by the Financial Services Board
- QD, an electronics manufacturer
- VGOLD, a gold mining company

Further detailed information on each company is shown in Table 3.2 below:

Table 3.2 Salient information in respect of each company			
Features	BINS	QD	VGOLD
Nature of business	Short term insurance company	Designer and manufacturer of specialised electronic cash handling systems	Gold mining company
Main regulatory framework	In addition to King III, the specific legislation imposed on insurance companies are the Insurance Laws Amendment Act (ILAA), the FAIS General Code of	QD is subject to the requirements of King III, which is a generic set of corporate governance and ERM requirements, imposed on all South African	The current South African mining legislation promulgated under the Mineral and Petroleum Resources Development Act 2004 which governs VGOLD’s operations (“MPRDA”) seeks, among other things:

	Conduct, SAM/Solvency II, the Consumer Protection Act and various conflict of interest issues.	companies. Specifically QD is subject to controls imposed by the South African Reserve Bank relating to the management and defacing of cash notes which are transported in the products manufactured by QD.	(i) to expand opportunities for historically disadvantaged South Africans (“HDSA’s”) to enter the mineral industry and obtain benefits from the exploitation of mineral resources; and (ii) to promote employment, social and economic welfare as well as ecologically sustainable development. VGOLD is subject to extensive legislation relating to health and safety issues, and the refining and sale of gold. VGOLD is also subject to Australian Stock Exchange listing requirements, and Australian legislation on the reporting of mining and geological operations specifically relating to the nature and extent of the mineral resources under the control of the company.
Ownership	Private	Private	Listed
CEO position	Founder and controlling shareholder	Major shareholder, not controlling	Founder and large shareholder, not controlling
Board composition	White males	White males, 1 Indian female	White males
Turnover p.a.	R750,000,000	R100,000,000	R2,000,000,000
No of staff	500	150	350
Subsidiaries	1 Australian company and several South African subsidiaries	Holding company and 1 operating company	Main company listing in Australia, several subsidiaries in South Africa with each different mining concessions
Growth status based on annual increases in turnover over previous 2	>20% annual growth	Annual growth <0%	>20% annual growth

years			
Level of gearing	Low	High	Medium
Major challenges faced by company	Curbing losses in Australian subsidiary; launching of new products	Liquidity stress; loss of market share due to regressive R and D program; lack of clear strategic direction	Fresh capital requirements, exacerbated by loss of confidence by investors in SA mining companies; political uncertainty relating to clarity over mining rights; access to mining skills
Criteria to achieve optimal financial stability	Achieve profitability in Australian subsidiary; further growth as new products come on stream	Clear marketing and sales strategy	Stable gold price above USD900 and access to further capital
Directors and senior managers	11	9	5

The names have been abbreviated to provide anonymity.

During the course of the interviews, other causal links were sought, such as those identified below in Table 3.3 between a Strongly Compliant Board* and a Weakly Compliant Board (*defined earlier).

Table 3.3 Examples of the types of relationships which will be investigated during the course of this research	
Strongly Compliant	Weakly Compliant
Boards demonstrating a high level of regulatory compliance	Boards demonstrating a low level of regulatory compliance
Boards demonstrating a low degree of mental bias with respect to risky projects	Boards demonstrating a high degree of mental bias with respect to risky projects
Boards exhibiting a wide range of experience or awareness of risk issues	Boards exhibiting a narrow range of experience or awareness of risk issues
Boards which have recently suffered from strategic errors in terms of risk assessment	Boards which have not suffered from strategic errors in terms of risk assessment
Boards which have a high risk exposure in terms of structure (operational or financial gearing) or	Boards which have a low risk exposure in terms of structure (operational or financial gearing) or

industry	industry
----------	----------

3.3 Rationale for the use of the inductive comparative case study method

As discussed in 3.2 and shown in Table 3.3 above, there were a number of possible relationships between variables which were expected to emerge as being worthy of detailed investigation into why Boards responded as they did to risk. Some of these links were embodied in the research objectives, and there were other possible causal links such as:

- between corporate governance implementation and cognitive bias with respect to assessing corporate risk.
- between the degree of cognitive bias and the ability to develop effective ERM strategies.
- between the degree of compliance and the quality of risk management systems.
- how did risk management differ between highly compliant and less compliant Boards.
- between industry type and compliance; companies were selected across different industries/sectors.
- whether there was a link between the diversity of cognitive bias within the Board, and its level of risk compliance.

An inductive approach seemed most appropriate as there was the opportunity to gauge responses to the researcher's interaction with Board members, and draw inferences from these empirical observations.

In choosing the most appropriate case study method, the following issues were considered. A comparative case study seemed the most appropriate method to use as there were 3 companies results with which to make comparisons. A number of interesting links were expected to emerge, from which comparisons could be drawn. The alternative experimental approach was problematic as it was not easy to isolate any one variable, say a particular aspect of the risk environment, and change it, to gauge the impact of the change on other dependent variables. However, in the validation phase an attempt was made to highlight the possible irrational responses to the Risk Bias Questionnaire (to the extent that they existed) and assess to what extent bringing this to respondents' attention was likely to influence their subsequent responses. The extent to which the awareness of irrational choice under

risk could be mitigated by external intervention was identified as an area of consideration. Other experimental assessments were considered, based on the outcome of the results.

Finally, the use of a descriptive method seemed the least appropriate as there were multiple cases to investigate, using questionnaires and interviews to elicit rich and highly company specific data. This seemed inconsistent with the single case study, an unstratified type of market survey or an explanatory account associated with the descriptive method.

Therefore the method chosen was an inductive, comparative multiple case study.

3.4 Description of the data to be elicited

Having determined the overall aims and objectives and research methodology which will be used, it is now necessary to consider in detail what data was to be collected in order to carry out the empirical analyses. From Section 2.10 and 2.11, the literature gaps appear to be:

- The nature of institutional logics in the form corporate governance legislation imposed on Boards by regulators;
- The extent to which Boards are compliant;
- How Boards make sense of risk within the internal and external environment;
- How individuals are innately biased when faced with risk and how these individual biases translate themselves into group bias;
- How Boards interact as a group in dealing with strategic issues, and consequently how Boards as a group respond to risk and uncertainty.

The nature of the data required is summarised in Table 3.4 below:

Table 3.4 Nature of data required to address gaps in the literature	
Literature gap	Data required
Nature of institutional logics in form of corporate governance legislation imposed on Boards by regulators	Details of the Corporate Governance Laws in South Africa (King III) and other regulatory frameworks governing the legal operation of the company
The extent to which South African Boards are compliant	Data relating to the extent of compliance of companies across the regulatory spectrum

How Boards make sense of risk within the internal and external environment	Data relating to how Boards make sense of their risk
How individuals are innately biased when faced with risk and how these individual biases translate themselves into group bias	Existing research results on cognitive biases at an individual level
How Boards interact as a group in dealing with strategic issues	Eliciting data from Boards on how they construe their risk issues
How Boards as a group respond to risk and uncertainty	Eliciting group data from intact Boards on how they deal with risk and uncertainty

3.5 Detailed description of the proposed techniques to be used

Several techniques in the form of questionnaires and interviews were employed in this research to gather data and knowledge. The techniques used are summarized in Table 3.5 below.

3.6 Questionnaires and interviews

There are 3 questionnaires used in the main study, plus a RepGrid interview, the source and details of which are described below:

- Risk Readiness Questionnaire (Appendix B). This is based on Beasley et al. (2010, 2011, 2012, 2013) and is designed to measure the level of risk readiness of the Board. The Beasley et al. questionnaires were used in this research as a basis for the risk readiness study due to the widespread usage and publication of these results in the USA, and the endorsement by the Enterprise Risk Management Initiative (The ERM Initiative) in the College of Management at North Carolina State University, in conjunction with the American Institute of Certified Public Accountants (AICPA). This endorsement provided twofold validity relating to the specific questions and reliability of the results, due to the annual nature of the survey across a large number of USA companies. Because of the general non-USA specific nature of the questions, it was felt that they could provide a valid assessment of the level of risk readiness for South African companies. See Appendix A for a summary of the 2010 results.
- Risk Aversion Questionnaire (Appendix B). There is considerable literature on the extent of cognitive bias as discussed in Chapter 2 Part 3. Kahneman and Tversky

(1979) conducted in-depth research into the extent of human cognitive bias when faced with risk. This valuable work provides the basis for understanding human biases, and also for providing a methodology to assess the extent of such risk aversion. The literature urges researchers to develop holistic views of institutional theory, to include aspects of behavioural theory. Much of this thesis focuses on behavioural issues, particular cognitive biases associated with strategic decisions and attitudes to risk and uncertainty. “Fewer than one out of 8 of articles published in leading scientific management journals is about actual Board behaviour” (Huse, 2005, p. S66). It was considered prudent to use the existing methodologies which have been used extensively in many experiments and research on individuals to assess the degree of cognitive bias of Boards which can be considered as a form of cognitive entity. The work of Kahneman and Tversky (1979) was therefore used in the construction of a questionnaire designed to assess the level of risk aversion/risk tolerance of individual Board members.

- Risk Bias Questionnaire (Appendix B). Yazdipour, Constand (2010, pp. 96-97) argue that in the area of financial distress and failure it is not possible to focus purely on business operations to explain the reasons, but also to include human, managerial and decision making issues to explain corporate failure. They propose that human biases could provide more powerful success/failure predictability for small and medium sized enterprises. Their article is particularly relevant to this thesis in terms of the systematic bias of Boards when faced with risk:

“... findings from the fields of cognitive psychology and neuroscience have fundamentally changed the way we now look at how financial decisions are made. An entrepreneur may assign a low risk assessment to an otherwise high risk project and subsequently take on a riskier project than the potential return justifies.” (p.96).

The following comments from the same article are also relevant to this study:

“the very powerful affect heuristic has been defined as a feeling state, such as “goodness or badness” when one faces an investment opportunity....and can be viewed as a quality, such as acceptable or unacceptable, when associated with a risky business venture....and has been able to explain the otherwise peculiar negative relationship between expected risk and expected return or gain in investment situations.”(p.97)

This Questionnaire was based on Kahneman and Tversky (1979) and was designed to assess the degree of mental bias prevalent amongst Board members when faced with risky options. The results of the questionnaire were analysed in accordance with the detailed methodology set out in Appendix D of the Pilot Study. (The Risk Bias Questionnaire was not included in the original pilot study.)

- In order to gather information to answer the 2 final questions set out in Table 3.4 above, viz., how Boards interact as a group in dealing with strategic issues and how Boards as a group respond to risk and uncertainty it is necessary to identify a powerful interviewing technique to elicit answers to these questions. The RepGrid technique was used for this part of the research, and is discussed in considerable detail in 3.7 below.

The summary of data capturing techniques is set out in Table 3.5 below.

Table 3.5 Summary of the techniques used in the data and knowledge generation phase			
Technique	Data / knowledge gained	Process modeled on	Comment
Risk Readiness Questionnaire	State of readiness of the Board in terms of risk oversight obligations	Beasley et al., 2010; King III	These questions were drawn from the Beasley et al. survey, and from the King III regulations on risk oversight.
Risk Aversion Questionnaire	Presence of cognitive bias amongst Board members when faced with risky choice	Kahneman and Tversky, 1979	The questionnaire is based on the questions used by Kahneman and Tversky (1979)
Risk Bias Questionnaire	Extent of bias amongst Board members when faced with risky choice – does Prospect Theory apply to Board members	Kahneman and Tversky, 1979	Questions are based on questions used by Kahneman and Tversky 1979 to gauge the extent of cognitive bias under risk
Initial RepGrid interview with individual Board members	How do individual Board members construe their risk	Jankowicz(1990,2004); Wright R.P. (2006,2008);Alexander et al., 2011)	Interviews will be conducted with members of intact Boards using elicited constructs
Content Analysis	How do Boards as an intact entity construe their risk obligations	Jankowicz(2004); Wright R.P 2006	The repertory grids will be merged to provide an overall view of how the Board construes risk – this will be discussed with the Board and their responses recorded.

The original pilot study questionnaires which were set out in Appendix C were modified and expanded, principally in order to obtain additional information which appeared

deficient from the pilot study. More detail on these changes is discussed in the pilot study (Chapter 4).

3.7 Repertory Grid Techniques (RepGrid)

Introduction

3.7.1 Assessing “Sensemaking” - Construct Theory and Repertory Grid Analysis

From the discussion in the literature review, it is possible to infer that Boards, comprising unique individuals, engage in a process of “sensemaking” in interpreting the risk environment. If there is an understanding of how individuals, and hence Boards, construe risk, one should be better placed to understand how Boards make sense of their risk environment, and the gap which exists between risk regulation and implementation.

Essentially, in order to investigate efficiently the way in which Board sensemaking works, and what sorts of outcomes are achievable, it is necessary to use appropriate techniques that describe the content of individual constructions; and to do so explicitly enough so that they can be examined, and the similarities and differences between individuals’ sensemaking identified and related to their role and stakeholder background; and particularly in the context of intact Boards, to use techniques that can allow examination of these constructions so that the process of negotiation over meaning can be identified.

It is therefore intended to use repertory grid techniques to measure Boards’ sensemaking of their risk management responsibilities.

In order to develop such a systematic basis to analyse human cognition – and in this case how Boards understand risk and its ramifications- Kelly (1955/1991) developed personal construct theory (PCT), an explicit theory of human understanding. To elicit understanding (or “sensemaking”) Kelly (1955/1991) developed Repertory Grid Analysis (RepGrid), a technique for measuring intended meaning. Individuals creatively formulate hypotheses or constructs to explain the apparent regularities of their lives and the environment in which they reside. The theory Kelly (1955/1991) developed for describing how people construe meanings provides a convenient technique for assessing the sensemaking in which a Board engages.

According to Kelly (1955/1991) meaning is conveyed in the form of contrasts, referred to as an individual’s personal constructs. Constructs are therefore the building blocks of

meaning, and different people may have different ways of construing the same thing. A repertory grid is a set of rating scales which uses the individual's own personal constructs about an issue, topic or subject and uses ratings to express the strength or conviction of personal meanings.

A repertory grid interview (RepGrid) is thus a formal way of extracting or eliciting information from an individual in a structured measurable manner, without interviewer influence or bias (Jankowicz, 2004).

The RepGrid technique has been widely used in the psychological sciences, management sciences, industry and business practice, including the nature of managerial cognition, strategic planning and processes where a deep understanding is required of the processes underlying a chosen topic (Jankowicz 1990, 2004; Jankowicz and Wright, 2007; Jankowicz and Hisrich, 1987, 1990; Stewart and Stewart , 1982; Alexander et al., 2010).

The RepGrid technique therefore provides a powerful mapping tool (Jankowicz, 2004; Wright R.P., 2004) used to explore the depths of cognitive understanding and reasoning, particularly in terms of how people make sense of their internal and external environment. RepGrid (Weick, 2001; Kelly, 1955/1991) was used in the account which follows to elicit how intact Boards construed elements of their regulatory obligations with respect to risk management. RepGrid techniques have been widely reported in the literature as providing a “powerful, rigorous and systematic interviewing approach” (Wright R.P., 2004 p.63, Alexander et al., 2011) of eliciting how cognitive behaviour might influence how Boards engage in strategic decision making in terms of ERM (Jankowicz 1990; Wright R.P., 2004, 2006, 2008; Wright and Jankowicz, 2007).

In particular Repertory Grid Technique has been used to assess the way Boards function (Wright, 2006); further, the following table 3.6, taken directly from Wright R.P.(2008, p. 756) demonstrates the past noteworthy works using RepGrid technique in strategy research, and provides important validity to the choice of elements used in the main study.

Table 3.6 Summary of past noteworthy works using RepGrid techniques in strategy research			
Authors	Grid Elements	Supplied or	Element

		elicited elements	characteristic
Daniels, de Chernatony and Johnson (1995); Daniels, Johnson and de Chernatony (1994); Hodgkinson (1997a); Reger and Palmer (1996); Walton 1986)	Companies as competitors	Elicited	Homogeneous
Daniels, Johnson and de Chernatony (2002); Ketchen and Palmer (1999); Reger (1990); Reger and Huff (1993); Spencer, Peyrefitte and Churchman (2003)	Companies as competitors	Supplied	Homogeneous
Dutton, Walton and Abrahamson (1989); Simpson and Wilson (1999);	Strategic issues facing organisations	Elicited	Homogeneous
Dunn and Ginsberg (1986)	Organizational innovations	Supplied	Homogeneous
Dunn, Cahill, Dukes and Ginsberg (1986)	Policy functions	Supplied	Homogeneous
Ginsberg (1989)	Strategic business units	Supplied	Homogeneous
O'Higgins (2002)	Non-executive directors	Elicited	Homogeneous
De Leon and Guild (2003)	Business plans	Elicited	Homogeneous
Bourne and Jenkins (2005)	Mixture of work and non-work elements	Elicited	Homogeneous
Wright, Butler and Priem (2003); Wright (2004)	Strategy making process	Supplied	Heterogeneous
Wright (2006)	Critical activities Boards do	Supplied	Heterogeneous
Jankowicz, 1990	Business Practice	Review	n/a
Jankowicz, Wright, 2006	Assessing strategic competence at Board level	Elicited	Homogeneous
Table taken from Wright R.P. (2008, p.756)			

Using RepGrid techniques, Wright (2004) carried out a study of 34 executives and members of top management teams of 28 high and low performing companies, to elicit the strategic cognitions utilised in making sense of their strategy making experiences. “By comparing how executives in successful firms think, interpret and make sense of their strategic experiences relative to executives in low performing firms, top managers in organisations can learn to think and craft winning strategies for sustained competitive advantage.” (Wright R.P., 2004, p.76). The conclusions Wright (2004) drew from this particular paper was when comparing executives from low and high performing firms was the difference in language and “core perceptual dimensions when describing what

constitutes successful strategy making”(Wright R.P., 2004, p. 61). This study is particularly relevant to this thesis for the following reasons:

- it uses RepGrids to elicit information because it is “known to be a powerful, rigorous and systematic interviewing approach to discover how people make sense of their worlds” (Wright 2004, p.63), and therefore supports the use of RepGrids in this thesis;
- it studies strategy making of several Boards, and tries to establish how successful Boards (measured by their ROE), may think differently in respect of strategic thinking, from their less successful counterparts;
- it facilitates the selection of appropriate elements (see Glossary) for the elicitation process in order to understand how Board members (and intact Boards) make sense of the risks facing their firms;
- it is a useful technique to aggregate the information from several members of the same Board, and hence will provide useful information of how successful intact Boards will construe their risk differently from less successful Boards;
- It demonstrates that in a single interview, it is possible to obtain accurate and rich data.

While the RepGrid is widely used in the social sciences, there are nevertheless some criticisms of the technique (Karapanos, Martens, 2008, pp. 3-5) relating to, for example, the following factors:

- Are idiosyncratic tools a basis for objective research in a homogeneous group context?
- Manipulating group RepGrid data and using it as an indication of group behaviour may not be in line with the original philosophy underlying RepGrid techniques, which was to account for diversity of individual thought.
- Do individuals actually think in the form of bi-polar constructs, especially in the context of commercial issues, and in the case of this thesis, about risk issues?
- Are rating scales representative measures of conviction?

Further information on RepGrid analysis, and the results obtained from pilot and main study interviews are set out in later Chapters.

Further analysis of the research paradigms together with the epistemological and ontological assumptions will be dealt with in the Methodology section.

It is the intention to use RepGrids in eliciting information from Board members of companies during a pilot study, and to use this information drawn from several different members within Boards (intact Boards), as well as from members across different Boards. For intact Boards it is intended to compare, contrast and combine the grids of the respective Board respondents, and to categorise these pooled constructs according to the meanings and sentiments they convey about risk (Jankowicz, 2004). In so doing it will be possible to draw comparisons between how Boards differ in their attitude and response to risk. It was the intention to identify 3 Boards, 2 of which appeared to be well managed and compliant in terms of risk, and 1 of which was less so. By comparing the behaviour of the better managed companies in terms of risk against the less well managed, it was possible to derive conclusions about how Boards could better manage their risks.

In closing this sub-section it is worth mentioning cognitive and cause mapping is a further well recognised technique for analysing organisational sensemaking (Weick, 1995). This has led to the use of causal analysis in the development of strategic planning (Eden et al., 1979, 1983).

Importantly and relevant to this research, Hodgkinson et al.,(1999) used cause maps in a field experiment to assess whether the trained use of cause maps amongst senior executives could be used to successfully eliminate cognitive biases, such as the framing effect (which arises when minor changes are introduced in the way problems are presented without changing the essence of the problem); this investigation concluded that systematic cause mapping could reduce the extent of framing bias in strategic decisions involving risk and uncertainty.

Having considered both options carefully, the use of RepGrids seems to offer a more time efficient means of eliciting information and for providing a quantitative basis for comparing the way different Boards construe risk.

The background to the use of RepGrids has been discussed in the literature review chapter. The methodology has been further discussed in the pilot study, Section 4.8.

A set of 9 elements of risk were obtained from interviews. A further element was introduced to assess views around the issue of Board remoteness from reality, and the 11th element was obtained through the results of Wright (2006). As already discussed, elements should provide a reasonable coverage of most aspects of whatever is being investigated, covering the four corners of the subject matter. In this research a comprehensive set of risk elements which affect companies in general was chosen. The chosen elements also needed to be discrete so that a wider range of construction could be elicited from respondents (Wright R.P., 2006, p. 309).

Grid protocol states that the choice of elements should be based on the topic of research and should be homogeneous, representative and discrete or distinct. Recently, Wright (2008), see Table 3.6 above, experimented with the use of heterogeneous elements. He found that the issues to be analysed in strategic analyses in a corporate environment were more conducive to the use of heterogeneous elements such as critical resources, SWOT analyses, company rules and regulations, strategy implementation, appraisal of CEO and senior management, stakeholder issues, plans and budgets and long term missions and objectives.

Further, Wright R.P. (2006, p.70) also introduced an element which he found elicited deeper understanding of the cognitive processes of senior executives. This element he labeled E6 “Carrying out the strategic process the way you prefer”. A modified form of this extra element will be added to the set of elements defined in the pilot study. This modified element will be “Carrying out the risk management process the way you prefer”. The purpose of adding this extra element was to understand how individual Board members positioned themselves with respect to the current risk strategy being applied.

In order to mask the heterogeneity of the supplied elements, and to use language more familiar to executives, Wright R.P. (2008, p.757) used “doing” phrases instead of nouns, and the elements used in this thesis have deliberately been couched in terms of doing phrases. The final set of elements is shown in Table 4.7 below.

3.7.2 Format of the interviews

Each Board member’s interview followed the same format:

- Each of the elements derived in the Pilot Study, Table 4.7 was printed onto a separate card, with its definition stated alongside.
- The cards were numbered from 1 to 11, and members were presented with cards in the same order to improve reliability. Cards were presented in a defined sequence to ensure that as far as possible a different combination of elements appeared in each triad. Where possible depending on time constraints, interviewees were required to answer all questions.
- A triadic form of elicitation was used with a rating scale of 1 to 5 as described in the pilot study.
- The Kellyan question (1955/1991) posed with each set of 3 cards presented was:
“In what way are any two of these elements similar, but differ from the third, in respect of the way you think about the risk issues in your organization”
- There was a single supplied construct:
“Overall a lower potential risk to the business vs. overall a higher potential risk to the business”

The purpose of supplying this construct was to assist in the preservation of individual meaning when the constructs were aggregated in the content analysis.

3.8 Selection of analytical techniques

The analytical techniques used to analyse the data are summarized below:

3.8.1 Analysis of the Risk Readiness Questionnaire

For each question in Section 1, which gauged the extent of readiness of the Board, the average scores on the 11 point Lickert scale were calculated. The reason for using the 11 point scale was to be consistent with the techniques of Beasley et al. (2010). Non-parametric statistical tests were conducted to assess whether within Boards members thought differently about their levels of risk readiness, and whether on average the Boards themselves thought differently from each other about their levels of risk readiness.

3.8.2 Analysis of the Risk Aversion Questionnaire

This Section gauged the extent of risk aversion of the Board. The results of each Board member were used to arrive at an average score, which indicated the degree of risk aversion

of the Board. This was compared with other risk variables, for example as set out in Table 3.2 above.

3.8.3 Analysis of the Risk Bias Questionnaire

This Section gauged the extent of the mental bias of each Board member when faced with a risky choice. A full analysis of the extent of the bias within Boards and between Boards will be carried out using standard statistical techniques. The overall average bias within each Board was compared with the results of the Risk Readiness Questionnaire to establish any possible links between corporate governance and risk bias at Board level.

3.8.4 Analysis of the RepGrid data

The research resulted in RepGrid interviews from 22 interviewees across 3 Boards representing BINS Insurance, QD Electronics and VGOLD Goldfields. The RepGrid interviewees were provided with 11 elements (the key risk factors facing the business) and 1 supplied construct (“overall contributes a higher source of potential risk vs. overall contributes a lower source of potential risk”). Each interview elicited around 10 constructs, so that there were 213 elicited constructs in total. These 213 constructs required analysis, and the technique used is referred to as “content analysis” (Jankowicz, 2004).

From these different constructs it was expected to gain an understanding of differences within Boards and between Boards operating in different industries with different perceptions in terms of risk profiles. As discussed in Section 3.3, it was hoped to establish causal links between several variables contributing to, or resulting from, sources of enterprise risk as shown in Table 3.2. The challenge in aggregating the constructs from a number of different individuals/groups was intended to achieve the following conflicting objectives:

- How to eliminate duplication of elicited meaning to facilitate effective comparison
- How to retain as much as possible of the essence of personal meaning from each of the interviewees.

As expected, some compromise was needed. The constructs were examined individually, and those which conveyed similar or approximately similar meaning were grouped together into Categories. This iterative process resulted in the categorization of all items. Unclassifiable items were placed into a separate “miscellaneous” category.

Once the data was effectively grouped, it was possible using standard (e.g. χ^2) statistical techniques to assess how constructs within each Board were allocated across different categories which summarized their collective meaning; and the percentage of constructs within each category were compared across Boards, to assess whether any categories featured more prominently between Boards.

3.9 Reliability and validity of the RepGrid technique

People are according to Kelly (1955/1991) in a “state of motion” and their thoughts around issues are continually changing. They are influenced by the internal and external issues of the day. The answers and statistics produced below can only be relied on to provide an insight as to how the Boards thought at the time, and it may not be possible to assume that their answers will be consistent over time. Fransella, Bell and Bannister (2004) deal extensively with the issues of reliability and validity in RepGrid studies. At best we may only be able to conclude that there is a high degree of correlation for constructs (say around 70%) for constructs elicited over successive periods, that there is greater stability of choice for the more popular (“more intense”) constructs chosen. Reliability and validity will depend on the nature of the questions, the group involved, the way the questions are framed and their consistency and so on.

There are therefore specific issues to consider in attempting to establish reliability of the RepGrid technique, and whether the results of a RepGrid interview are likely to be repeated over time. To establish reliability we need to ask the question: “ *Will RepGrids produce the same results when repeated with the same interviewer, using the same elements, the same Kellyan question, bearing in mind the way questions may be framed, the order of questions and the possibility of interviewer induced bias?*”

Kelly (1955/1991) argued however that it was inappropriate to apply this test to RepGrid techniques, as in fact the whole purpose of this technique was to facilitate the identification of change, and that humans are in a continual state of mental flux, testing and re-testing the facts which confront them. This argument lies at the centre of Kelly’s (1955/91) Fundamental Postulate (see Appendix N).

There is significant evidence (Wright R.P. 2008, Table 1) that when tests/re-tests are done, a high percentage of repeat constructs emerge. The issues of reliability in the case of a

RepGrid interview in which the underlying core constructs of an individual are being assessed have been the subject of on-going debate. An individual may change the way in which he feels about a certain topic for example, if provided with more information on that topic (Wright R.P., 2008).

In terms of validity, the question was whether the RepGrid technique would provide answers which reflected the inherent underlying views of the respondent. Kelly's (1955/91) Theory of Personal Constructs applied to how Boards construe risk; how they will analyse, interpret and make-sense of risk issues; and how they modify their thinking and develop changing plans to deal with the internal and external risk environment. According to Kelly (1955/1991) human constructs which are the fundamental units of thought, tend to be bi-polar in nature. We tend to think in terms of contrasts (e.g. beautiful versus plain). In this case the question regarding validity is whether Kelly's Theory of Personal Constructs will elicit the actual views held by the individual, or in this research, individual members of the Board. And more to the point will the responses relating to how Board members view risk issues within the company, which are not so much to do with their strongly held beliefs on personal issues, represent their innermost views on the "external" subject of risk issues facing the company for which they work.

Validity was addressed in 5 possible ways.

- Firstly the technique was used to assess how Boards see and interpret risk within their company. These results were fed back to the individual respondents to check for validity.
- Secondly, the results were fed back at a Board level (while preserving confidentiality), to assess whether they made sense to them.
- Thirdly the results across Boards were compared to assess whether the results made sense, taking into account the different types of businesses which formed part of the research.
- Fourthly, results of the Risk Readiness, Risk Aversion and Risk Bias Questionnaires provided a form of data collection/source triangulation against which the results of the RepGrid interviews were able to be compared.
- Finally, an analysis was carried out to check whether the elicited constructs and their connections with the elements did in fact make sense. After the interview, each

construct was considered in order to assess its relevance to the Kellyan question, and where for example the interviewer gave 2 constructs which were similar, whether the ratings for the corresponding elements were consistent.

3.10 Brief comments on the statistical tests to be used

The Risk Readiness Questionnaire (Appendix B) elicited data based on an 11 point ordinal Lickert scale. The reason for using this scale (as opposed to the more usual 5 point scale) was to follow the technique used by Beasley et al. (2010, 2011, 2012). As there were no assumptions relating to the distribution of such data, and the fact that the data were ranked, non-parametric methods were applied in their analysis. In particular the Wilcoxon Rank-Sum test was used to establish differences in locality of the Risk Readiness results between the different companies, and the Friedman Rank Test for randomized block design was used to establish whether members of each Board think differently about their risk issues. The detailed results of these tests are presented in Chapter 5.

In the case of other data, parametric methods were used, and the following key assumptions were made:

- The observations were independent between the companies – that is the companies operated in completely different industries, and the members of each Board had no knowledge of the other companies, and were not provided with any information in respect of each other.
- The observations were drawn from normally distributed populations – the sample size was low, with the result that the application of the Central Limit Theorem is a potential weakness of the analysis.
- Sampled populations have the same variance – this is also a potential weakness of the analysis.
- The variables were measured on an interval scale.

3.11 The assumptions made in this research

The Beasley et al. (2010) questionnaire which was expanded by the addition of new questions provided a basis for understanding the extent of adherence to corporate governance. This questionnaire was assumed to be relevant to Boards of South African companies in terms of assessing their compliance.

During the interviews, quantitative questions to assess mental biases amongst Board members were posed to each interviewee; the questions which were drawn from Kahneman and Tversky (1979) were assumed:

- to provide statistically reliable results in terms of their number and structure; and
- accurately to depict whether Board members were biased or not when faced with a choice question in the context of the risks facing the company, and whether this was how they would respond in practice to a real life problem of choice faced by the business; and
- to provide an accurate and insightful analysis of managerial cognition at Board level with respect to risk oversight.

One of the assumptions of Personal Construct Theory, is that the elements presented to [the Board] members are thoroughly familiar and understood by them. In some cases this may not have applied – for example a Financial Director may not think about market risks, and a Sales Director say, may be unaware of the true nature of the financial risks facing the firm.

Finally, it was assumed that the results of the RepGrid interviews and analysis techniques would be sufficiently robust to be able to draw inferences as to how and why intact Boards performed in terms of their risk management.

3.12 Summary of the research method used

From the discussion of the above points, the research method used was a constructivist, exploratory, multiple case study method, using a semi-ethnographic, formal, structured interview approach, and questionnaires, to obtain qualitative and quantitative data in order to establishing the possible existence of causal links between observed variables of risk and risk management, and, why they existed.

In the next Chapter 4 the results of the pilot study are presented and discussed. Chapter 5 deals with the results of the main study questionnaires. Chapter 6 is the follows with the results of the RepGrid analysis. Chapters 7 and 8 deal with the research objectives, further theory development, discussion, literature synthesis and the summary and conclusions.

Chapter 4. The Pilot Study

4.1 The purpose and structure of the pilot study

During the course of the pilot study certain limitations became evident in the way the questionnaires, used to elicit information from Board members, were originally structured. In order to clarify this process, the main steps in the evolution of the questionnaires used in the pilot study are described below:

- For the initial group of pilot interviewees, the pilot study was initially based on a Risk Readiness Questionnaire, a Risk Aversion Questionnaire (these questionnaires are shown in Appendix C (pilot study)), and a RepGrid interview
- After initial pilot interviews it became apparent that a new Risk Bias Questionnaire was required and that additional questions required to be added to the Risk Readiness Questionnaire and Risk Aversion Questionnaire all of which are shown in Appendix B (main study). The development of the main study questionnaires (Appendix B), therefore arose during the course of the pilot study.
- Further pilot study interviews were then conducted with a second group of pilot interviewees, using the full set of Appendix B (main study) questionnaires
- At the end of the Pilot Study these Appendix B (main study) questionnaires were adopted for the main study without further amendment.

The purpose of the pilot study was:

- To test the design, methods and techniques planned for the empirical stage and to modify them in the light of the findings of the pilot study.
- To gauge responses relating to Risk Readiness of the Boards (Appendix C (pilot study)) interviewed and to gauge whether this methodology was sound.
- To gauge responses to the Risk Aversion Questionnaire (Appendix C (pilot study)) and assess the results.
- To test the Risk Bias Questionnaire (Appendix B –main study questionnaire derived during the course of the pilot study) by gaining an understanding of how Boards responded to risk and uncertainty.
- To identify, for the main study, a key set of common elements which would encompass all the broad areas of risk a business might face; and to fulfil a

procedural objective of choosing how best the grids may be constructed and analysed.

4.2 The procedure for the pilot study

The pilot study consisted of a 2 Part face-to-face interview conducted with 9 individual Board members of different companies from different industries during which a series of questionnaires described in 4.1 were completed. These Board members were chosen from a list of companies with whom the researcher had a close connection, and from organisations involved in a range of different industrial sectors. Interviews were conducted in 2 Parts.

Part 1- The Risk Readiness Questionnaire and the Risk Aversion Questionnaire; and

Part 2 – A RepGrid interview was conducted.

The construction and source of the questionnaires were discussed in Chapter 3. The results of the pilot study are discussed in detail in the rest of this section below:

4.3 Pilot Study sample

9 pilot study interviews were conducted in total. The following Table 4.1 shows the numbered interviews which took place. Only 7 completed the questionnaires, the remaining 2, (8 and 9) provided an interview to discuss corporate risk issues and their main concerns around risk management. Information from these latter 2 interviewees were used to gain additional understanding of corporate risk issues, and aided in the selection of elements of risk used in the RepGrid study.

Table 4.1 Details of the interviewees for the Pilot Study	
1	CEO- a major listed hospital group
2	Chairman Audit Committee- a major international courier company
3	CFO- a large listed plastics manufacturer and mining supplies conglomerate
4	CEO- a large listed plastics manufacturer and mining supplies conglomerate
5	CEO – South African subsidiary of major global bank
6	CEO – large listed healthcare group
7	Director of Risk (Ph.D.) – Big Four Accounting firm
8	CEO – world’s largest international healthcare insurer
9	Senior partner – large accounting firm

4.3.1 Other questions posed on Risk Readiness Questionnaire (Appendix C pilot study)

Other questions were posed to the interviewees as per the Risk Readiness Questionnaire with the following results in parentheses:

- What risks are monitored by the audit committee (mostly operational, compliance, financial; only one respondent indicated audit committee was responsible for risk oversight of all risks).
- The highest level of reporting of the CRO (2 were to the CEO, 2 to the CFO and in 3 cases there was no CRO).
- Reasons for increased focus on ERM vary (new FD, unanticipated events causing distress for competitors, best practice decision).
- Main barriers to ERM implementation (mainly that ERM adds bureaucracy, competing priorities and a lack of perceived value).
- The current state of ERM in the organisation (2 indicated partial implementation, 1 indicated no formal process in place, others indicated varying states of readiness).

Table 4.2 sets out the full set of results of the Risk Readiness Questionnaire (Appendix C pilot study questionnaires).

4.3.2 Summary of the results of the Risk Readiness Questionnaire (Appendix C pilot study)

The following main conclusions can be drawn from the above table of results:

History

- Over the previous 5 years companies experienced an increase in risk and complexity and experienced unexpected operational surprises.

Current level of risk management maturity

- Companies were immature with respect to their risk oversight obligations, and had improved marginally in terms of their reporting and disclosure around risk issues

How well does the company manage its risk?

- The average score under this category of Risk Readiness Questions was slightly below 7, where 6 is the mean score on the scale from 1 to 11. Thus generally the Board members interviewed did not feel that they managed their risk very well.

Table 4.2 Results of the Risk Readiness Questionnaire (Appendix C)								
	Pilot Study Interviewees							
Codes given to interviewees	1	2	3	4	5	6	7	Av
	lh	Tnt	Wg	ww	Db	ho	kp	
History								
To what extent has the risk and complexity of your business increased over the past 5 years	10	9	6	n/a	7	9	7	8
To what extent has your business faced an operational surprise in the last 5 years	8	5	7	n/a	5	9	4	7
Current level of risk management maturity								
What is the level of maturity of the company with respect to a fully functioning ERM King III process (current regulatory standards)	8	8	3	n/a	9	3	7	6
How has the level of reporting and disclosure on risk issues increased over the past year	10	8	8	n/a	6	9	7	8
How well does the company manage its risk								
Indicate the extent to which you are confident that overall risks are being managed in an effective manner	7	7	7	n/a	4	5	8	6
Indicate the extent to which the company maintains strategic risk inventories to counter supply line/ industrial disruption	3	7	8	n/a	n/a	9	n/a	6
Indicate the extent to which the company assesses supply chain risks	10	7	4	n/a	n/a	3	5	5
Indicate extent to which top risk exposures are formally discussed by the Board when strategic issues are discussed	9	8	6	n/a	5	9	9	7
Indicate extent to which existing risk exposures are considered when evaluating possible new strategic initiatives	8	9	5	n/a	4	10	7	7
Indicate extent to which risk appetite has been articulated in the context of strategic planning	10	7	7	n/a	7	9	7	8
Indicate extent to which the company has carried out a formal assessment of market risk	8	8	7	n/a	5	7	10	7
Indicate extent to which company has carried out a formal assessment of industry risk	3	8	8	n/a	8	2	10	6
Indicate extent to which company has carried out a formal assessment of political risk	8	5	6	n/a	1	10	7	6
Indicate extent to which company has carried out a formal assessment of regulatory/legal risk	9	8	8	n/a	9	10	11	9
Indicate extent to which company has carried out a formal assessment of IT risk	10	9	4	n/a	9	5	11	7
Indicate extent to which organisation uses qualitative means to assess risk	7	9	7	n/a	6	9	9	8
Indicate extent to which organisation uses quantitative means to assess risk	9	6	7	n/a	8	9	7	8
In assessing risk does the Board actively considers risk probabilities	2	7	7	n/a	3	10	8	6
Indicate extent to which Board believes compensation structures contribute to excessive risk taking by management	2	6	3	n/a	8	1	2	4
Indicate extent to which risk exposures are considered when making capital allocations	10	9	8	n/a	8	11	6	9
Board tolerance to source dependence								
What is companies attitude to strategic risk eg M&A(1=intolerant)	8	n/a	3	n/a	9	5	8	6
What is companies attitude to operational risk (1=intolerant)	4	n/a	6	n/a	5	2	1	4
What is companies attitude to financial risk (1=intolerant)	2	n/a	3	n/a	5	7	2	5
What is companies attitude to market risk (1=intolerant)	2	n/a	3	n/a	8	2	7	4
Influence of budgetary performance on Board attitude to risk								

Does company become more risk seeking when company reaches its targets	8	n/a	5	n/a	7	9	2	7
Does company become more risk averse when company misses its targets	8	n/a	5	n/a	9	10	2	8

- Companies felt that they had adequately assessed their legal and regulatory risk, with an average score of 9.
- Interviewees were most confident that compensation structures did not adversely affect the risk of the business by for example having share options schemes which encouraged risky behaviour.
- On average companies did not score above the mean in terms of being able to manage the company's risks in an effective manner. This average was borne out by the mediocre assessment across other measures of risk management in this sub-section.
- The results were fairly inconsistent across all respondents, indicating varying degrees of risk readiness.

Board tolerance to source dependence

Board members seemed to have a different attitude to risk depending on the source of risk, being most intolerant to market and operational risk, and most tolerant to strategic risk, though there was overall a relatively low degree of tolerance to all risks, the scores varying between 4 and 6. Interestingly, members indicated a low degree of tolerance to market risk (4), yet in the previous section the average score for the extent to which they carried out a formal assessment on market risk was only 7. Thus low tolerance for risk did not translate into an appropriate formal assessment of the risks.

Influence of budgetary performance on Board attitude to risk

There was a high degree consistency between attitudes to risk irrespective of the company's performance, suggesting that there was no sensitivity to risk around budget performance. The reflection effect predicted by Prospect Theory (Kahneman and Tversky, 1979) indicates there is a switch in attitude to risk when risky prospects offering gains are replaced by risky prospects offering losses. In this small sample the reflection effect did not seem to apply to companies – see responses to the last 2 questions. According to Prospect Theory, Board members should have been more risk tolerant when facing losses as opposed

to gains. This result did however reinforce the outcome of the Risk Averse Questionnaire and the Risk Bias Questionnaire of the pilot analysis.

4.3.3 Results of Risk Aversion Questionnaire (Appendix C – pilot study)

These questions were based on the questions posed by Kahneman and Tversky (1992) and were intended to gauge the risk aversion of the Board by requiring the interviewer to select the option he would choose (on behalf of the company) amongst pairs of hypothetical risk based projects.

The results of all 7 interviewees are shown in Table 4.3. Interviewees were required to choose between X and Y on the basis that the decision was to be made in the context of the company, and not their own personal situation. The first 4 questions were framed as gains. The second 4 questions were framed as losses. One of the Risk Aversion Questionnaires was not completed (due to time constraints).

4.3.4 Summary of the Pilot Study Risk Aversion Questionnaire results-Response of interviewees when facing gains – Prospects 1-4:

The results in Table 4.3 indicate that the interviewees had different attitudes to risk when facing gains, indicated by their preferences for the alternatives under each of the first 4 prospects when facing gains.

Interviewee 1 preferred the higher payoffs in each case and was prepared to accept the risk of loss.

Interviewees 2 and 3 chose the less risky prospect in all but one of the cases.

Interviewees 5, 6 and 7 chose the less risky options in all cases.

While this sample may have been too small to produce reliable results, it is interesting to note that, when facing gains, one respondent was actively risk seeking, and the others were partially or wholly risk averse.

It is interesting to note that Interviewee 1 recorded his company as having a very risk averse approach to their strategic decision making, while he himself chose 5 out of 8 risk seeking selections.

Out of 24 possible answers from all respondents, 6 choices were for the riskier prospect, indicating general risk aversion when facing gains, as predicted by Kahneman and Tversky (1992).

Table 4.3 The results of the Risk Aversion Questionnaire													
This questionnaire gauges whether the company exhibits risk averse behaviour when facing gains (Prospects 1 – 4), and whether the company is risk tolerant when facing losses (Prospects 5 - 8). A indicates Risk Aversion. T indicates Risk Tolerance.													
Prospect choice by the 7 pilot interviewees													
Facing Gains		Payoff 1	Probability p	Payoff 2	Probability 1-p	Expected value	1 Lhc	2 Tnt	3 Wing	4 Winw	5 Db	6 Ho	7 Kp
Prospect 1	X	10	.2	0	.8	2		A	A	Na	A	A	A
	Y	30	.2	-5	.8	2	T						
Prospect 2	X	10	.5	0	.5	5		A	A	Na	A	A	A
	Y	30	.5	-20	.5	5	T						
Prospect 3	X	30	.2	0	.8	6					A	A	A
	Y	50	.2	-5	.8	6	T	T	T	Na			
Prospect 4	X	25	.55	0	.45	14		A	A	Na	A	A	A
	Y	50	.55	-20	.45	11	T						
Facing Losses													
Prospect 5	X	0	.2	-5	.8	-4					A	A	A
	Y	-30	.2	0	.8	-6	T	T	T	Na			
Prospect 6	X	-10	.55	-5	.45	-3	A	A	A	Na	A	A	A
	Y	-20	.55	0	.45	-11							
Prospect 7	X	-20	.2	-10	.8	-12	A	A	A	Na	A	A	A
	Y	-50	.2	0	.8	-10							
Prospect 8	X	-40	.55	-10	.45	-27	A	A	A	Na		A	
	Y	-50	.55	20	.45	-19					T		T

Payoff represents the possible gain from the gamble with the respective probability.

Expected value = Payoff 1 x p + Payoff 2 x (1-p) where p is the probability of Payoff 1. A indicates a risk averse choice. T indicates a risk seeking choice. Na indicates no response from interviewee.

4.3.5 Summary of the Pilot Study Risk Aversion Questionnaire results-Response of interviewees when facing losses – Prospects 5-8:

When facing losses interviewees 1, 2 and 3 chose the riskier option on Prospect 5, in spite of the fact that the expected loss was higher on the chosen option X than the alternative Y. Interviewees 5, 6 and 7 chose the less risky Prospect 5.

On Prospect 6 all respondents chose the first less risky option X.

On Prospect 7 all respondents also chose what appeared to be the less risky option X, even though the expected value of the option was greater than under the alternative Y.

On Prospect 8 four of the 6 respondents chose the less risky prospect X, in spite of the fact that the expected loss on X was significantly higher than the apparently risky alternative.

Out of 24 possible answers from all respondents facing losses, in only 5 cases was the riskier Prospect chosen, indicating an intense level of risk aversion when facing losses.

Combining the results from the negative and positive prospects, respondents selected 11 risk seeking options out of a total of 48 responses, indicating a high degree of risk aversion.

While the sample chosen is small, these indicative results appear to be **inconsistent** with Prospect Theory, which postulates that when facing gains people are risk averse, and when facing losses people tend to become risk tolerant.

An interesting insight emerged from interviewee 3, who indicated that his response to questions about risk would alter depending on the likely impact the outcome was likely to have on different aspects of the business. Thus for example when faced with liquidity issues, this particular interviewee was likely to adopt a far more risk averse position to this risk than to any other risk. This introduces a potentially interesting angle to the study of risk management in companies, which Kahneman and Tversky referred to as the source dependence effect. When questions are framed in the context of risk to individuals, source dependence has been shown to apply (Heath and Tversky, 1991). It would be interesting to establish if Boards in general display source dependence. If so this would seem to be contrary to normative expectations that Boards should be equally risk averse irrespective of the source of risk.

In light of these comments from interviewee 3, a number of further questions were introduced into the Risk Readiness Questionnaire, as shown in Appendix B (Note: During the course of the pilot study additional questions were introduced into the Appendix C Risk Readiness Questionnaire resulting in the Appendix B version used in the main study, as discussed below). These questions tested the attitude of the Board member to various sources of risk. The results in Table 4.2 tested members' attitudes to strategic, operational, financial and market risk. As can be seen from the response to these questions towards the end of Table 4.2 there was considerable variation in the attitudes of individual board members to these sources of risk. There was also considerable variation between companies in terms of their attitudes to these risks. RepGrid interviews were expected to cast additional light on this issue.

4.3.6 Changes to the questionnaire

To overcome the problems set out above, the following changes to Appendix C (pilot study) were made. The changes were incorporated in Appendix B (main study questionnaires):

- Additional questions (27 to 30) have been included in the Risk Readiness Questionnaire as shown in Appendix B, designed to assess the effect of source bias on the way Boards construe risk.
- 8 further questions have been added to the Risk Aversion Questionnaire, making a total of 16 questions overall. These additional questions will increase the reliability of the responses, and will also provide greater information on the degree of risk aversion. This expanded Risk Aversion Questionnaire is in line with the prospects presented by Kahneman and Tversky (1992). These Risk Aversion Questions have also been reformatted, simplified and extended to assist in understanding them more readily by using actual numerical amounts rather than percentages. This is also in keeping with Kahneman and Tversky (1992). See Appendix B.
- The Risk Bias Questionnaire - see below - comprised a full set of additional prospect questions in line with the methodology employed by Kahneman and Tversky (1992). See Appendix B.

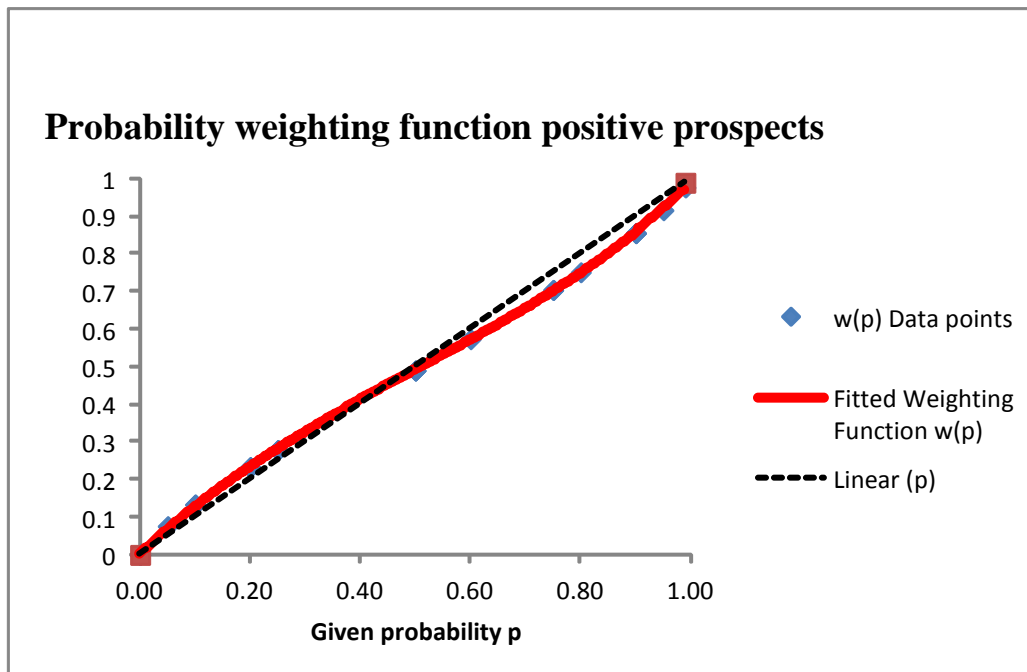
To summarise, the revised, reformatted Risk Readiness, Risk Aversion and the Risk Bias Questionnaires used in the main study are shown in Appendix B.

Table 4.4 below summarises the differences between the pilot Appendix C questionnaires, and the Main Study Appendix B and the Kahneman and Tversky methodologies.

4.3.7 The S-shaped probability weighting functions

Figures 4.2 and 4.3 show the results of the averaged responses from pilot interviewees who completed the Risk Bias Questionnaire. The Reader will recall from 4.1 that a new Risk Bias Questionnaire was introduced after several interviews were concluded. The results of the Risk Bias Questionnaire shows the S-shaped probability weighting functions as proposed by Kahneman and Tversky. The mathematics behind Prospect Theory was briefly discussed in 2.2.8 above. The curves plot the given probability under each prospect (along the X –axis) with the construed probability of the Board member. Thus Boards will tend to overweight low probabilities, and underweight high probabilities. Boards construe risk differently when facing gains as opposed to losses. This is evident in the difference in curves between Figures 4.1 (facing gains) and 4.2 (facing losses).

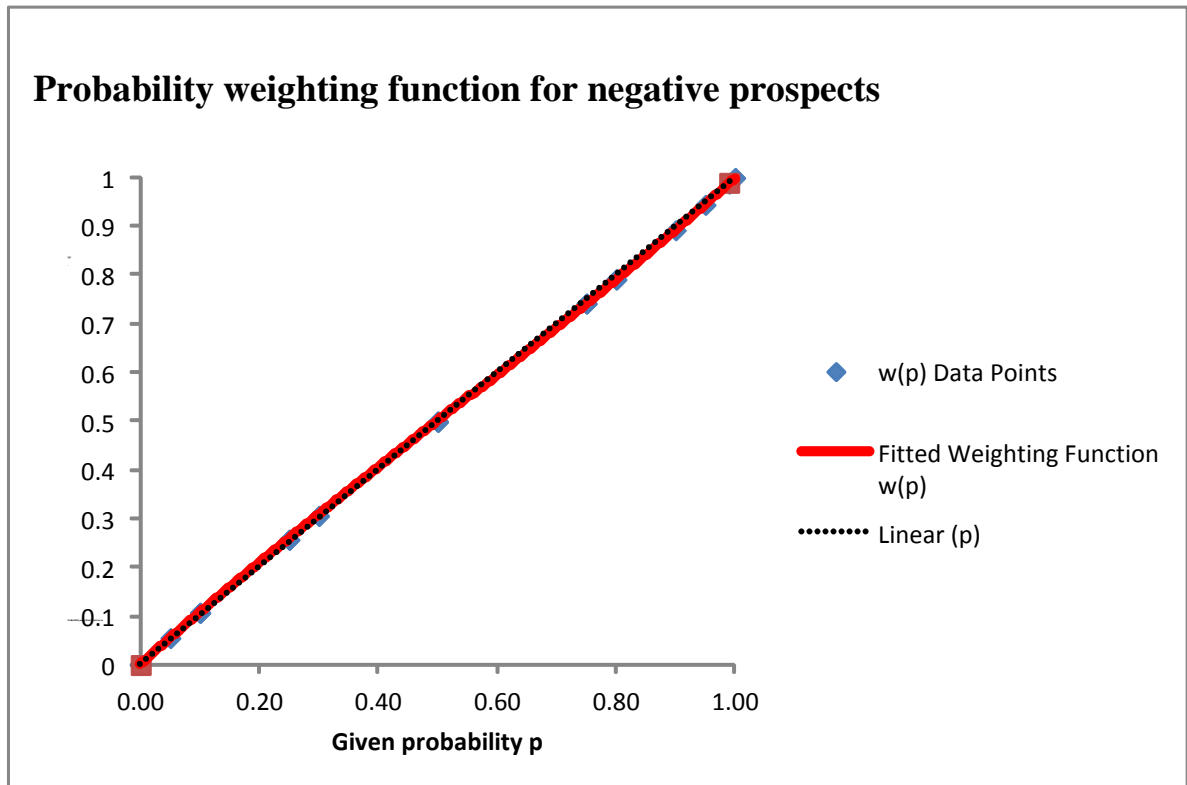
Figure 4.1 Probability weighting function for positive prospects



The probability weighting function $w(p) = p^a / (p^a + (1-p)^a)^{1/a}$, plots $w(p)$, the weighted probability against p , the given probability, where $a = .85$. The straight line indicates the

line of nil bias, and the deviation of the red line from the line of nil bias indicates the degree of distortion between the normative, rational probability estimation, and the Board's elicited construed measure of risk.

Figure 4.2 Probability weighting function for negative prospects



The probability weighting function plots $w(p)$, the weighted probability against p , the given probability. The slight curvature indicates the minor degree of distortion between the normative, rational probability estimation, and the Boards' elicited construed measure of risk.

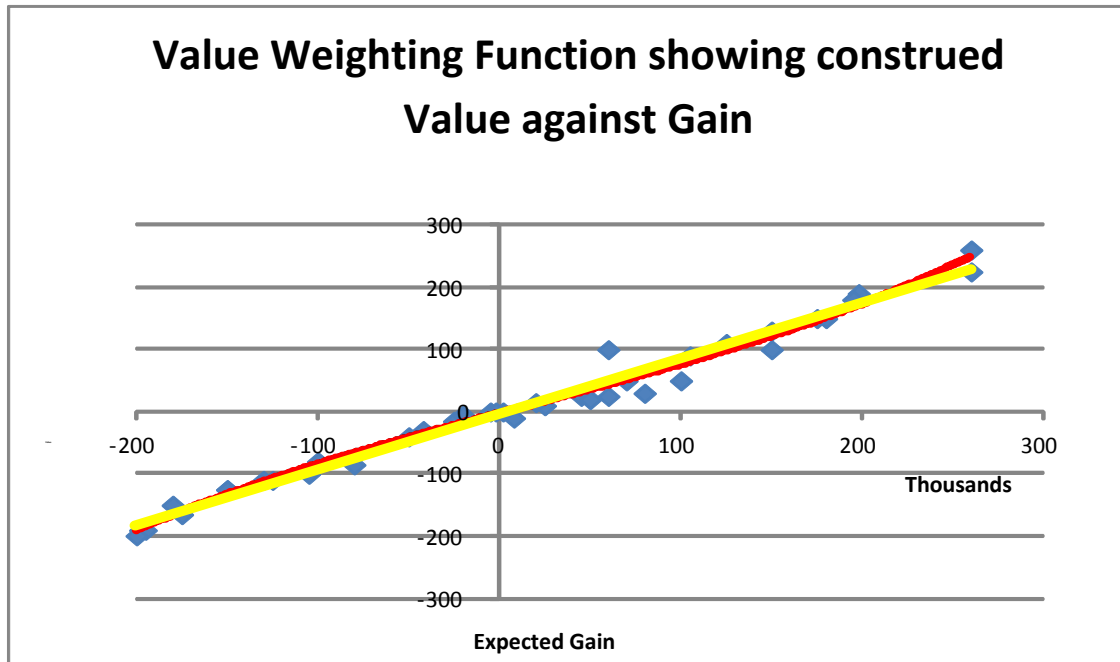
4.3.8 The probability weighting function

Figure 4.3 below shows the value weighting function derived from median data (in line with Kahneman and Tversky (1992) from interviewees 1, 5 and 7, using the Risk Bias Questionnaire in Appendix B*. The curve plots the value v (the value attached to the prospect by the interviewee) against the gain (the expected value of the prospect). This plot demonstrates that the S-shaped value function (see Figure 2.3) is not evident, suggesting that based on these 3 interviews, there was no risk aversion for gains, nor was there risk tolerance for losses. There does however seem to be a small amount of loss aversion,

though not nearly as pronounced as in the case of the students investigated by Kahneman and Tversky (1992).

*Note: The reader will recall that during the course of the pilot study a new questionnaire was introduced – the Risk Bias Questionnaire – which was tested for interviewees 1,5,7 in the pilot, and used in the main study as shown in Appendix B.

Figure 4.3 Value weighted function showing the data points $v(x)$ (diamond shapes), the fitted K and T curve (blocks) and a linear regression line



A full summary of the techniques used in the prospect theory part of this pilot study is included in Appendix D.

4.3.9 A Summary of the Differences between the pilot study and main study questionnaires

A comparison between the analysis techniques of the pilot study, the main study and those employed by Kahneman and Tversky (1992) is set out in Appendix E 1. A summary of the differences is shown in Table 4.4 below:

Table 4.4 Summary of the differences in the questionnaires used			
	Appendix C Pilot Study Questionnaires	Kahneman and Tversky method (1992)	Appendix B Main Study Risk Aversion and Risk Bias Questionnaires

Replication of Kahneman and Tversky methodologies	Not fully – no value function	Fully	Fully
Number of questions	8	56	56+
Test for Risk Aversion	Yes	Yes	Yes
Test for Risk Bias	No	Yes	Yes

4.3.10 Summary of the Risk Bias Questionnaire

In summary, in valuing risky prospects using students as subjects, Kahneman and Tversky (1992) plotted construed value against actual value, revealing a concave curve above the origin (referred to as the reference point), and a convex curve below the origin, giving rise to an asymmetric S-shaped curve. The concavity above the origin indicates risk aversion (people attach lower incremental value to increasing gains), and the convexity below the origin indicates risk seeking behaviour (people become increasingly inured to losses as they grow). Further the prospect curve is far steeper below the origin, than above the origin. This is indicative of loss aversion. In the words of Kahneman and Tversky (1992, p. 303) “losses loom larger than gains”.

The results of the pilot study indicated that the 3 Board members interviewed, in their capacity as Board members, did not exhibit risk features of the student populations chosen by Kahneman and Tversky (1979, 1992). As the regression plot is a straight line with a gradient of close to 1, the risk aversion/tolerance did not increase with the magnitude of the prospect, nor was there evidence of loss aversion.

The Pilot Study revealed that Boards generally: fell short of their compliance obligations; did not weight probabilities to the same extent; and were generally not as risk averse or risk seeking as individuals drawn from the Kahneman and Tversky (1979,1992) sample population.

4.4 The Repertory Grid Pilot

4.4.1 Summary of the repertory grid interviews – choice of elements

Interviewees were first introduced to the specific research topic, and were assured that all information was confidential and could not be linked to them or their companies directly. The process by which a repertory grid interview is conducted was discussed in Section 1.2 above. Interviewees were requested to try and identify a set of risk factors, or elements (the terminology used in this thesis – see Glossary) which potentially faced their businesses, and

which were of equal weight and potential impact on the business if such risks were to materialise. Elements were required to be chosen at the same level of “hierarchy”, so that the elements of risk identified by the interviewee were at the same “high end” level of detail as discussed by the Board in their risk management program. Attention was paid to ensuring that chosen elements did not overlap, and did not form subsets of one another.

Different interviewees identified slightly different sets of risk during their grid interviews, but there was substantial overlap between them, such that a common set could be identified, to be used for all subsequent interviews. This ensured that all main sample interviewees would focus on the same field of discourse. Table 4.5, below, shows this selection of elements. The 4 pilot interviews elicited 26 elements of risk, which have been incorporated into 9 broad elements summarised and grouped as follows in Table 4.5:

Table 4.5 Summarised elements of risk elicited from the first 4 pilot interviews	
<i>Political risk</i>	<i>An issue which clouds the South African economic landscape and encapsulates issues such as political instability, political interference, business unfriendly legislation, social unrest and labour militancy. Black economic empowerment falls under this broad grouping and satisfies the hierarchical criterion</i>
<i>Supply side risk</i>	<i>Includes energy, supplier pricing and over-dependence on suppliers and difficulties in accessing and holding raw materials.</i>
<i>Regulatory risk</i>	<i>Incorporates political regulation, also encompass environmental issues, corporate governance, accounting standards, tax and law on competition.</i>
<i>Resources risk</i>	<i>Includes staffing issues and access to capital goods.</i>
<i>Operational procedure risk</i>	<i>Encompasses all internal processes, proprietary techniques, and operational risk issues such as product failure.</i>
<i>Systems risk</i>	<i>Includes all hardware and software designed to measure and control outcomes and includes all IT systems risk (hardware, software and IT systems support) and all administrative and financial systems to control process flow.</i>
<i>Strategic risk</i>	<i>Covers the risk of decisions regarding corporate activity, capital investment and generally decisions which do not relate to day to day operational issues, and which may change the scale, scope and nature of the business.</i>

<i>Market risk</i>	<i>Encompasses a large number of issues relating to product pricing, competitive activity, anti-competitive behaviour and legislation, corporate M and A, technology issues. While these may well have different impacts on the business, in terms of the hierarchical principle they will be grouped into one element.</i>
<i>Financial risk</i>	<i>Includes operational gearing, financial gearing, liquidity, access to capital, interest rate risk, risk of financial fraud and reporting will be defined as financial risk.</i>

4.4.2 Results of the repertory grid interviews

The repertory grid interviews were designed to assess how Boards construe risk.

In the first 4 interviews respondents were first asked to state the main elements of risk. 29 elements of risk were recorded, from which 9 main elements were chosen, as defined in Table 4.5 above. In the next 3 interviews, respondents were provided with these 9 elements. In the final 3 interviews a “catch all” supplied construct was provided which asked interviewees to rate the importance of each element of risk to their organisation.

While there is insufficient data to carry out a thorough components analysis of the results of the interviews, an “eyeball” analysis was adopted, the results of the interviews were carefully scrutinised and the following main conclusions were drawn:

- There was some considerable consistency between the constructs offered by the respondents.
- Boards were concerned about the following issues which were common to all of them:

Short and long term impacts of risk

Costs of mitigating risk

To what extent is the source of risk volatile

To what extent is the risk foreseeable

The effect of risk on on-going viability of the company

To what extent is risk under the control of management.

- It appears that the areas of risk which receive high management attention are those with which the Board is familiar. Boards do not seem to ponder the unlikely, which is where unexpected events are likely to emerge. For example the CEO of the Hospital Group anticipated little market risk, as they had 35% market share and felt that their competitors faced the same environmental issues. Their argument is that all market participants are subject to the same common external and internal influences, and hence they would all suffer/benefit to the same extent; and therefore were unlikely to lose market share. Clearly this would represent an area of high unexpected risk and potential high volatility if participants were to adopt different future strategies.
- Each business had some unique constructs relevant to their own operations. In these areas management attention was keenly focussed on these core areas.

4.4.3 Results of the “Intact Boards” interviews

As discussed in Section 2.4.5 and 2.4.7, for the main study it was intended to identify and interview different members of the same Board (referred to as an intact Board) in order to understand how different Boards, as a group, responded collectively to risk and uncertainty. In this pilot study, 2 respondents (viz. the CEO and the FD/CRO) were employed by the same company, a listed industrial group. Whilst these 2 respondents didn’t constitute the entire Board, because of their executive roles, and the proximity in which they work, the detailed analysis of their repertory grid interviews was of interest. The first item of interest to note is the differences in the elements offered by the two interviewees. These results are summarised in Table 4.6, which has been arranged to highlight the points of difference.

While there is appreciable agreement in the nature of the risks anticipated by both parties, there are 7 non-overlapping areas. It is clear that the 2 most senior executive directors have different perceptions of their risk exposures, and the degree of severity which each of the shared elements has on the business. They also focus on different time horizons with respect to risk.

The RepGrid analysis indicated that Interviewee 3 perceived that the above elements of risk were far less co-dependent than Interviewee 4. This means there was a mismatch in perception relating to the overall risk to the business, and the extent to which these risks

were interrelated. Interviewee 3's perception was that the risks were more spread and less concentrated than believed by his counterpart.

In terms of the perceived impact on the business from the various sources of risk set out above, again Interviewee 3 believed that the nature (as opposed to each source) of risk has more facets to it than believed by Interviewee 4.

For example, the former recognized that the uninsurable risks present far greater risks to the business as a whole than the insurable elements. The latter on the other hand perceived that a high degree of management time ought to be spent on the unexpected risks and to explore these more carefully.

Table 4.6 Elicited elements of risk from 2 members of the same Board (Interviewees 3 and 4)	
Interviewee 3 – CRO/FD	Interviewee 4 –CEO
Elements	Elements
IT System Risk	-
BEE Risk (affirmative action)	-
Staff/skills shortage risk	Skills shortage risk
Strategic risk	Strategic risk
Market/customer risk	Market risk
Supplier dependency risk	Interruption of raw material supply risk
Supplier pricing risk (R/\$)	Instability of raw material prices risk
Technology risk	Lack of future innovation risk
Product failure risk	-
Energy cost risk	-
-	Political risk
-	Future of the mining industry risk
-	Lack of future product diversification risk

Interviewee 3 stated that his “perception of risk depends on the nature of the risk”. This implied source dependence.

The differences in the way these interviewees construed risk suggested that an investigation into intact Boards was likely to lead to interesting results.

4.4.4 Testing for element reliability and the introduction of the departure from reality element

Further interviews 8 and 9

Further investigations and interviews were done to establish the comprehensiveness and inclusivity of the chosen elements for the repertory grid part of the interview process.

Details of interviewees 8 and 9 are:

8 Chief Risk Officer and COO – the world’s largest international medical insurer

9 Senior Partner – major accounting practice

Interviewee 8

Interviewee 8 was requested to state the major elements of risk their organisation faced, without having sight of the shortlist obtained in Table 4.5 above. The response received is set out below with the corresponding elements which have been selected in Table 4.5 above in bold italics:

The risks associated with operating in an adverse economic climate (***Market risk***)

The risk associated with managing significant change (***Strategic risk***)

The risk that we do not maintain a good relationship with our insurance regulators in key markets (***Regulatory risk***)

The risk of changes in Government policy impacting the current healthcare models in our key markets (***Political risk and Regulatory risk***)

The risk of management overstretch (***Resources risk and Operational risk – part of this risk is also addressed in 8.3 below***)

Key person dependency (***Resources risk***)

The risk of damage to the company brand through clinical incidents or data loss (***Operational risk and System risk***)

The risks associated with the implementation of Solvency II and required capital levels
(*Financial and Regulatory risk*)

The risks associated with environmental issues (*Operational risk*)

The risks associated with political incidents impacting the business (*Political risk*)

These elements match exactly with those set out in Table 4.5 above, with the exception of “Risk of management overstretch”. This provides further confirmation that the choice of elements is reliable; but that consideration should be given to the inclusion of an additional element covering Board overstretch.

Interviewee 9

This interviewee is the senior partner of a major accounting practice. He has advised companies on risk management for over 30 years. He was asked to state the elements of risk he felt Boards faced. His list of risk elements matched the list set out in Table 4.5 with one very important addition. He stated that in his view additional major risks Boards faced were:

- losing touch with the key operational risks within the company;
- and not keeping sufficiently abreast with important market trends.

These risks arose as a result of long chains of command within large organisations resulting in Boards suffering from a “loss of reality” (sic).

This additional element of risk is similar to the “Management overstretch” risk advanced by interviewee 8.

Second interview with Interviewee 1 (CEO Hospital Group)

Interviewee 1 (CEO – large listed hospital group) was requested to comment on the validity of this extra “Management stretch” risk element within the context of their own organisation. During the interview this was highlighted as a major concern on the part of

the Board. The CEO agreed that this element should form part of the RepGrid interview. It is worthy of note that this particular element was not raised in the first interview, as it is not specifically covered in King III as an item of risk on which Boards are required to report.

Psychology of ‘remoteness from risk reality’ phenomenon

It is possible that when faced with highly complex issues Boards may resort to altering their perception of reality, in order to develop responses to risk which are perceived to be soluble with greater certainty and confidence Schwenk (1984).

Kahneman (2013) also describes the role of various cognitive biases in risk sensemaking, and states that “[t]he world in our heads is not a precise replica of reality” (p.138), and “the affect heuristic simplifies our world by creating a world that is much tidier than reality” (p.140). These statements lead to the question whether businesses too, do not see the world as it really exists from a risk viewpoint, and whether they also suffer from the affect heuristic. (The affect heuristic can be described as a form of cognitive bias in which humans make judgements - in this case about risk - based on their personal emotions and by implication in the absence of logic).

From the literature review chapter, Yazdipour, Constand (2010, pp. 96-97) argue that in the area of financial distress and failure it is not possible to focus purely on business operations to explain the reasons, but also to include human, managerial and decision making issues, to explain corporate failure. Their article highlights the systematic bias of Boards when faced with risk:

“... findings from the fields of cognitive psychology and neuroscience have fundamentally changed the way we now look at how financial decisions are made. An entrepreneur may assign a low risk assessment to an otherwise high risk project and subsequently take on a riskier project than the potential return justifies.” (p.96).

It would appear important therefore to assess whether Boards are able to overcome this form of cognitive bias and whether indeed they are unaware of the reality of the risks they face.

Addition of an extra element of risk

Having established the validity of this extra element of risk raised by interviewees 8 and 9, and from the second interview of 1, and from the literature quotations as discussed above, the number of elements will therefore be extended to include “Risk arising from remoteness of the Board from operational and market reality”.

Great care was taken in the selection of the elements for this study. After the final interviews of the pilot study, further research was conducted into the work of Wright R.P. (2006) in respect of RepGrid analysis, particularly with respect to the choice of elements. This process was discussed more fully in Chapter 3. The following additional notes are relevant to the final choice of elements.

The final choice of elements to be used in the RepGrid analysis

To summarise, in RepGrid analysis an element is one of the basic examples of the particular topic which is being investigated. The research question is:

Why do South African Boards, in spite of strict corporate governance regulations governing the management of risk, exhibit varying degrees of effectiveness in developing strategies to deal with their enterprise risk management (ERM)?

Boards attempt to construe and make sense of their risk issues. The elements chosen were therefore all the individual sources of risk which together comprised the full spectrum of risk which faced the organization (Jankowicz, 2004). A detailed discussion on the process which led to the present selection of elements was dealt with in the preceding sections of the Pilot Study and in Section 3.6 above.

In this research the elements from the pilot study were used; an additional element was added; and the existing elements were converted into doing phrases as discussed in Section 3.7, as Table 4.7 below shows.

4.4.5 Further support for validity of the elements

The following additional comments and citations are relevant in terms of the elements chosen for the main study.

Recent research carried out in South Africa by Deloitte (reported in the Sunday Times newspaper Business section, September 11th, 2011, p.8) carried out amongst 447 CFO's of South African companies, highlighted the following risk issues as being of prime importance in firms' strategic plans: market risk, supply side risk including labour issues, financial risk, regulatory and political issues. Surprisingly, CFO's cited risk management, regulation and compliance, planning and forecasting amongst others as being low on their list of priorities. This report added further important validity to the choice of elements for the main study.

Table 4.7 Set of elements and definitions to be used in the main study	
<i>Understanding political risk</i>	<i>An issue which clouds the South African economic landscape and encapsulates issues such as political instability, political interference, business unfriendly legislation, social unrest and labour militancy. Black economic empowerment falls under this broad grouping and satisfies the hierarchical criterion</i>
<i>Developing strategies to deal with supply side risk</i>	<i>Includes energy, supplier pricing and over-dependence on suppliers and difficulties in accessing and holding raw materials.</i>
<i>Implementing Regulatory risk countermeasures</i>	<i>Incorporates political regulation, also encompass environmental issues, corporate governance, accounting standards, tax and law on competition.</i>
<i>Identifying and managing resources risk</i>	<i>Includes staffing issues and access to capital goods.</i>
<i>Managing operational procedure risk</i>	<i>Encompasses all internal processes, proprietary techniques, and operational risk issues such as product failure.</i>
<i>Carrying out the risk management process the way you prefer</i>	<i>Invites the Board member to consider other ways in which more effective risk management strategies may be used</i>
<i>Managing systems risk</i>	<i>Includes all hardware and software designed to measure and control outcomes and includes all IT systems risk (hardware, software and IT systems support) and all administrative and financial systems to control process flow.</i>
<i>Identifying and managing strategic risk</i>	<i>Covers the risk of decisions regarding corporate activity, capital investment and generally decisions which do not relate to day to day operational issues, and which may change the scale, scope and nature of the business.</i>
<i>Identifying and managing market risk</i>	<i>Encompasses a large number of issues relating to product pricing, competitive activity, anti-competitive behaviour and legislation, corporate M and A, technology issues. While these may well have different impacts on the business, in terms of the hierarchical principle they will be grouped into one element.</i>
<i>Identifying and managing financial risk</i>	<i>Includes operational gearing, financial gearing, liquidity, access to capital, interest rate risk, risk of financial fraud and reporting will be defined as financial risk.</i>
<i>Remoteness risk due to the Board being distant from operational and market reality</i>	<i>Encompasses the risks from Boards losing touch with the realities of the business, either by not keeping abreast of changes to the internal and external environment, or through a process of delusion or through the loss of accurate information being fed up and down the chains of management command within the organisational structure.</i>

4.5 Outcomes of the Pilot Study

4.5.1 Summary of the pilot study

A pilot study was carried out in accordance with the procedure and objectives laid out in the research proposal. 9 Pilot Study interviews were conducted in total, (of which 7 completed the questionnaires), after which the Risk Readiness Questionnaire was extended, 8 questions were added to the Risk Aversion Questionnaire and a new Questionnaire, the Risk Bias Questionnaire was added. These main study questionnaires are shown in Appendix B.

The new Risk Bias Questionnaire tests the validity of Prospect Theory in a Board environment, and follows the procedure of Kahneman and Tversky (1992). Respondents 1, 5 and 7 provided answers to the Risk Bias questionnaire to provide an initial insight as to whether Board members were biased when faced with risky alternatives as predicted by Prospect Theory (Kahneman and Tversky 1992). These responses generated surprising results (Figure 4.1, Figure 4.2 and Figure 4.3) which do not entirely reflect the fourfold characteristics of choice proposed by Kahneman and Tversky (1992), namely:

- loss aversion – the interviewees were not noticeably more risk averse facing losses than facing gains
- risk aversion when facing gains – the curve was not concave above the reference point
- risk tolerance when facing losses – the curve was not convex below the reference point
- the underweighting*/overweighting of high and low probabilities. Prospect Theory suggests an S-shaped curve where interviewees overweight low probabilities, and underweight high probabilities. The probability weighting curves produced by the 3 interviewees were slightly S-shaped for gains, but were almost linear for negative prospects. This indicates that, when facing losses, Board members are less likely to distort given probabilities.* in the context of Prospect Theory underweighting of probabilities describes a human tendency to attach a lower probability to a given event than is justified.

In the RepGrid part of the interview process, a total of 29 elements of risk were elicited, from the first 3 respondents, from which 9 were chosen. 3 respondents (1, 5 and 7) were

asked to comment on the adequacy, spread and comprehensiveness of the elements in terms of covering all aspects of business risk. In all cases the respondents confirmed that the list was comprehensive.

A further 2 interviews were conducted to confirm the reliability of the chosen elements. One more element was added. Further review of the literature (Wright R.P.2006) highlighted advances in the use of heterogeneous elements, and the value of verbalising the elements into language familiar to executives. This resulted in the choice of 11 elements which were considered sufficiently exhaustive to cover the spectrum of risks which companies face. These 11 elements, as shown in Table 4.7 above, were used in the main study.

Finally, 2 members of the same Board were interviewed. Their results demonstrated a difference in perception of the risks facing their company, as well as the degree of risk from various elements.

4.5.2 Conclusions drawn from the pilot study

The risks facing companies are deep and complex. Boards are faced with a bewildering array of risks which constantly shift and change in their intensity in line with the external environment. More and more, regulators are increasing requirements on Boards to devote greater and more detailed attention to risk issues.

This research of risks at Board level required a multi-faceted approach. The combination of a series of questionnaires, RepGrid interviews and the study of intact Boards and how Boards make their decisions provided insight into how Boards construed elements of their risk oversight obligations. Within the broad procedures devised to address the objectives and research question outlined in Section 1.1 above, the pilot study identified the following areas which seemed to merit further investigation, and the methodological techniques adopted to carry out this research:

- To assess the readiness of Boards to meet their corporate governance obligations in terms of risk oversight.(Risk Readiness Questionnaire based on Beasley et al., 2010).
- To interview and understand how Boards construe risk, which may provide an insight into how companies deal with risk and uncertainty (RepGrid Techniques were chosen to understand how Boards make sense of their risk).

- To assess whether Boards adhere to Kahneman and Tversky's descriptive theory of choice under risk (The Risk Aversion and Risk Bias questionnaires were based on the empirical studies of Kahneman and Tversky, 1979, 1992).
- To assess how intact Board members co-operate and interact when faced with risk and uncertainty (RepGrid techniques were used to elicit Boards' constructs, and these constructs were to be fed back to Boards to understand how they interacted).
- To understand whether Boards exhibit source dependence when faced with risk, and whether Boards violate normative rational behaviour when assessing risk from different sources (These questions are contained in the Risk Readiness Questionnaire).

4.5.3 Objectives and achievements of the pilot study

A pilot study was carried out to hone the techniques to be applied in the data gathering phase of the main study, and to provide sample results which were of assistance in refining the aims and objectives of the research. 9 interviews were conducted, using questionnaires and a RepGrid interview, the results of which were analysed as shown in the pilot study report, which is contained in this section.

The pilot study achieved the following main objectives in establishing the feasibility, practicality and usefulness of the techniques employed:

- By testing the Risk Readiness Questionnaire to assess the level of readiness of the Board in terms of corporate governance regulation.
- By testing the Risk Aversion Questionnaire to assess the extent of human biases each Board member exhibited when faced with questions around risk proclivity and aversion.
- By testing the Risk Bias Questionnaire to assess individual Board members Prospect Theory profile in terms of risk aversion facing gains, risk tolerance facing losses, loss aversion and the underweighting of high probability opportunities, and overweighting of low probability opportunities.
- By testing the use of RepGrid techniques to elicit valuable information from Board members relating to their attitudes to risk and uncertainty.
- By demonstrating that 2 senior members of one Board had very different views of the risk facing their company. This led to the decision in the main study to attempt

to conduct interviews with 3 intact Boards, 2 of which appeared to be well managed in terms of their ERM, and 1 of which was less so.

4.6 Synthesis of the pilot study and literature review results

The synthesis of the pilot study results and the literature review are summarised in Table 4.8 below:

Table 4.8 Summary of the synthesis of the pilot study and the literature review			
Area of interest	Results of literature review	Results from the pilot study	Comments on the relative outcomes
Prospect Theory	Humans are subject to a large number of individual biases. In particular, when faced with risk and uncertainty individuals exhibit risk aversion facing gains, risk tolerance facing losses, loss aversion, and underweight/overweight high/low probabilities respectively	While only 3 Board members were interviewed, the results suggest that the extent of the bias may be considerably reduced	There is not a great deal of literature on the bias Boards exhibit in terms of Prospect Theory. There is considerable evidence that Boards exhibit certain biases such as optimism bias, isolation effect bias, recency bias, but not much work in how Boards distort the true risks facing the firm
Corporate Governance	Worldwide, Boards exhibit a varying degree of readiness in terms of corporate governance regulation	In South Africa governance legislation appears to be more onerous than UK, European or USA legislation. South African companies are relatively well prepared	Board members commented that legislation in South Africa was becoming too onerous, and that the costs of compliance may not warrant the results. This implies that there may be no further reduction in risk from increased regulatory requirements
Board structure and knowledge base	Boards consist of individuals driven by a desire to improve their stature, and increase their wealth. Boards consist of cognitive factions with differing perceptions and levels of understanding of the internal and external risk environment. Only certain senior executive members of the Board have “core” knowledge encompassing most of the risk issues of the firm.	Different Board members consider their levels of risk readiness to be different, exhibit different tendencies towards risk, have different perspectives on the nature and extent of risks facing the firm, and construe these risks differently. There appears to be evidence of source dependence, whereby Board members will in the face of similar size threats, treat risks from different sources differently. Different members of the same Board construe their overall risks differently.	Board members’ financial packages may engender different risk attitudes. Different cognitive factions will compete for their views in terms of risky decisions. Boardroom politics in terms of leadership, knowledge and power will influence the final outcome.

4.7 Research Question Final Form

From the literature and pilot study results there are 5 major areas of risk management which lead to convergence towards the research question, as shown in Table 4.9 below.

Table 4.9 Developing the Research Question					
Review	Area of risk 1	Area of risk 2	Area of risk 3	Area of risk 4	Area of risk 5
Factors which influence the way Boards view risk	Understanding and awareness of the internal and external environment	The natural human biases people are subject to when faced with risk and uncertainty	Corporate Governance regulation, implementation and adherence	Boards comprise individuals with their own ambitions and agendas	The way Boards interact iro Boards construction, leadership,, “Groupthink” and collaboration
What does the literature and or pilot study say or not say	Boards try and make sense, they use technology and they obtain and analyse data	Individuals exhibit multiple biases in their thinking. Little literature on Board bias when faced with risk and uncertainty. No investigation of Prospect Theory at a group level	Most companies do not fully comply with their corporate governance obligations. The most compliant companies outperform their less compliant peers	Executives risk proclivity is linked to their salary and incentive structures	Only the most senior executive Board members have “core” knowledge of the operations of the company; cognitive factions exist within the Board
The research question from each area of risk	Are Boards able to make sense of and perceive internal and external threats accurately and can RepGrid improve risk mitigation	Are Boards biased in their thinking, and how does corporate governance regulation influence this bias	Does corporate governance regulation reduce risk as intended	Does executive compensation influence the risk taking behaviour and bias towards risk of the Board	Are Boards as “cognitive entities” effective at identifying and managing risk

The Research Question Why do South African Boards, in spite of strict corporate governance regulations governing the management of risk, exhibit varying degrees of effectiveness in developing strategies to deal with their enterprise risk management (ERM)?

The research question is re-stated below, together with the aims and objectives of the research:

The research question

Why do South African Boards, in spite of strict corporate governance regulations governing the management of risk, exhibit varying degrees of effectiveness in developing strategies to deal with their enterprise risk management (ERM)?

The aim of the research is:

To examine why Boards, in spite of strict corporate governance guidelines, deal with the myriad risk issues facing the company, to different effect, in developing strategies to deal with enterprise risk management.

The objectives of the research, with the techniques to be used in the research are:

- O1: To investigate to what extent Board members of companies which apply corporate governance regulations are liable to human bias in risk estimation.

The quantitative and qualitative data derived from the interviews (Appendix B Risk Readiness; Risk Aversion and Risk Bias Questionnaires) provided answers to this question.

- O2: To investigate to what extent Boards which are less subject to individual human biases are more effective in developing strategies to deal with ERM.

Levels of risk readiness were compared with levels of human bias (Appendix B questionnaires (Risk Readiness; Risk Aversion and Risk Bias Questionnaires)).

- O3: To investigate to what extent Boards that adhere to corporate governance are more effective in developing strategies to deal with ERM.

Levels of risk readiness were compared with measures of corporate governance implementation (Appendix B questionnaires (Risk Readiness; Risk Aversion and Risk Bias Questionnaires)).

- O4: To examine the ways in which the estimation and personal construing of risk differs between highly compliant and less compliant Boards.

The Risk Readiness, Risk Aversion and Risk Bias questionnaires and the elicitation of information during the RepGrid interviews and a scorecard were used to gauge whether Boards became more aware of their risk exposures and obligations; and hence more effective in implementing measures to identify and mitigate risk.

In summary, the techniques, Questionnaires and a RepGrid interview with members of the Board, were used to obtain an understanding of how Board members think about and construe risk.

4.8 Conclusion

Is it possible that corporate governance regulations engender a sense of false security amongst Board members? King III is highly prescriptive in terms of the activities the Board must carry out in order to achieve compliance. There are mechanical processes the executive must follow. For example, a probability must be allocated to the range of identifiable risks the firm faces. But who is to check whether all the risks are covered in the risk schedule, and who is to check the validity of such a risk measure? Are Boards capable of being realistic in doing so? The non-executive members of the Board certainly may not have a full understanding to appreciate the nuances of each situation. And once the risk values are attributed, then in the Board's mind, and those of the auditors who have to report on the corporate governance readiness, are the Board's governance obligations complete? Thus Boards, and the firms they represent, may be lulled into a false sense of security – a form of corporate governance moral hazard.

Understanding and conveying knowledge relating to risk exposure is in itself a complicated task. Complexity in the knowledge structure refers to the amount of information or the number of elements within a knowledge structure (Lyles and Schwenk, 2009). The amount of work executives face may not be conducive to having “think tanks” devoted to identifying and assessing risk measures. Thus peripheral knowledge relating to risk is not enhanced. The understanding of risk may reside solely with the CEO and the Financial Director who are “closest to the action”. It is possible that increased complexity around risk and uncertainty may result in an “inner core” level of knowledge – i.e. the executive directors possess inner core elements of a knowledge framework relating to risk about which there is an absence of detailed knowledge. This inner core knowledge is not

communicated to the management team, though is not withheld. These sentiments relating to risk reside deep within the cognitive processes of all but the leading executives of the management team. This is not to state that these executives are accurate in the perceptions, or that they clearly foresee or understand all the risks. But they have access to the most information, their jobs prescribe their risk oversight obligations, and by virtue of who they are, are likely to have the cognition to be able to “get their minds around” these complex risk issues. And that is why the empirical work is focused on the way in which Boards construe risk.

4.9 Details of the Chapters which follow.

The research now turns to the analysis and discussion of the results of the main study.

- Chapter 5 will deal with the analysis of the results of the Risk Readiness, Risk Aversion and Risk Bias Questionnaires.
- Chapter 6 will be the main results chapter, devoted primarily to the analysis of data derived from the RepGrid interviews.
- The aims and objectives will be discussed and analysed in Chapter 7, and an important new theory will be presented.
- Chapter 8 will summarise, conclude and answer the research question.

Chapter 5. **The Results of the Risk Readiness, Risk Aversion and Risk Bias Questionnaires**

This Chapter presents and analyses the results of the 3 Questionnaires. Further data obtained from the results of the RepGrid interview are discussed in Chapter 6. The Board members of 3 companies (QD, BINS and VGOLD) were interviewed individually, and each member completed these 3 different questionnaires as set out in Appendix B:

- Risk Readiness Questionnaire
- Risk Aversion Questionnaire
- Risk Bias Questionnaire

5.1 Further Signposting

In Section 1.4 a chapter summary was provided to assist the reader in following the overall structure of this thesis. At this point it is worthwhile reviewing the remainder and most important part of the thesis.

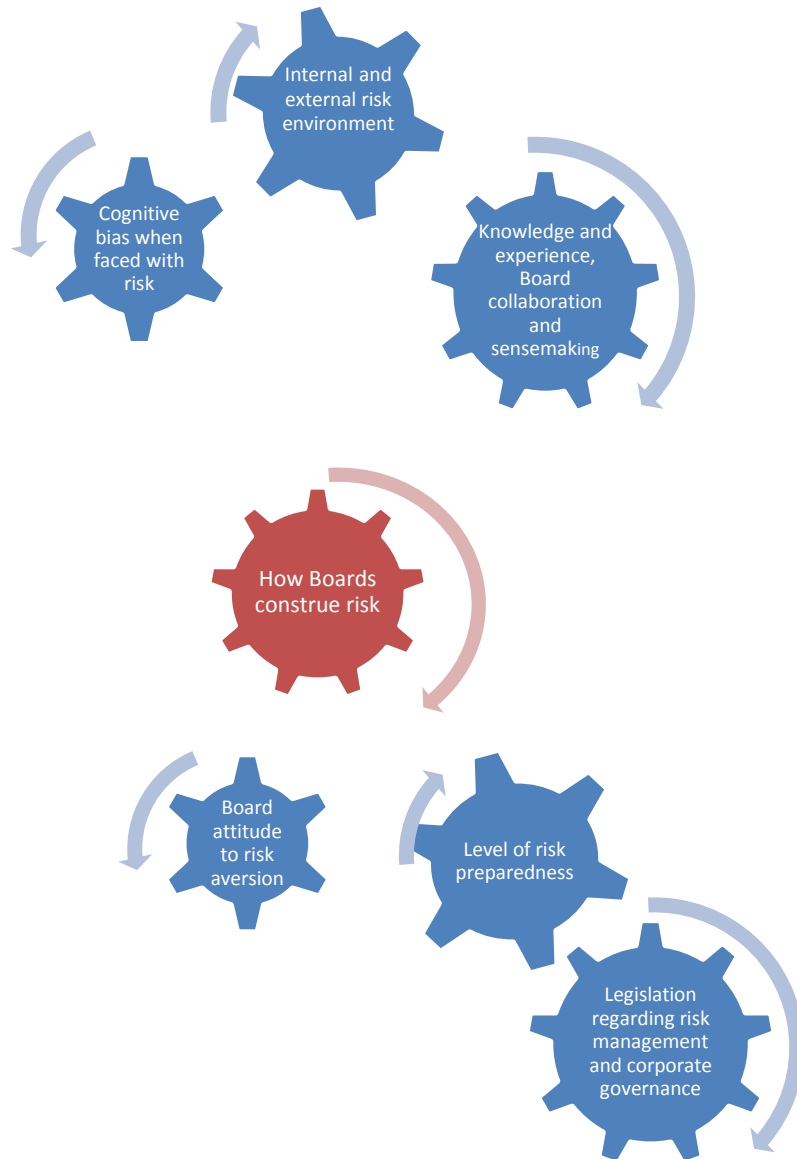
As stated before, this thesis is concerned with how South African Boards construe risk. There are many aspects to how Boards construe and make sense of their risk. In order to understand this complex process more clearly it is necessary to approach this research from several different points. This is more clearly demonstrated in Figure 5.1 below.

The use of moving cogs is intended to highlight several important aspect of making sense around risk issues as discussed in the literature review in Chapter 2.

- Companies are in a dynamic state of sensemaking.
- There are many factors both internal and external which affect companies decisions when faced with risk such as regulatory exigencies around risk management and corporate governance, Board diversity, knowledge and cognitive interactions, and communication and collaboration.
- Companies, as cognitive entities, are susceptible to various forms of bias, and there are different levels of understanding of, and tolerance towards, risk.
- All the internal and external factors impact to a greater or lesser extent on the sensemaking and decision making process.
- The cogs do not always turn in concert, but often there are conflicting issues, with opposing forces impacting on the risk sensemaking process.

This research attempts to understand the issues around construing risk at a Board level, and measure as many of these factors as possible and then draw conclusions and possible causal relationships where they exist.

Figure 5.1 Dynamic state of risk management



The questionnaires and RepGrid interviews are designed to elicit as much information as possible regarding the way Boards respond to risk. The results and discussions follow in the remainder of the thesis, and will now be discussed in detail.

5.2 The Results of the Risk Readiness Questionnaire

Question 26 taken from the Risk Readiness Questionnaire (Appendix B) was used to provide an indication whether the 3 companies were similarly prepared to manage their risk in terms of an overall ERM system. The results are summarised in Table 5.1 below.

Table 5.1 The Risk Readiness Questionnaire (Question 26 Risk Readiness Questionnaire, Appendix B) to indicate whether the companies are similar in terms of their overall Enterprise Risk Management (ERM) systems in place				
		BINS ACTUAL	QD ACTUAL	VGOLD ACTUAL
1	No ERM system currently in place	0	7	0
2	Investigating concept of ERM; no planning in place	2	1	1
3	No formal ERM in place; steps being taken	3	0	1
4	Partial ERM in place	6	0	1
5	Fully functioning ERM in place	0	0	0

Table 5.1 compares the responses from the 3 companies' members relating to their view of the extent to which their respective companies conform to the legal requirements around the introduction of an effective ERM system.

Table 5.2 below shows the scores derived from the Risk Readiness Questionnaire (Appendix B). As stated earlier, the 11 point scale was used in order to achieve consistency with Beasley et al., (2010, 2011, 2012) on which the Risk Readiness questionnaire was based. 1 indicated lack of compliance, while 11 indicated full compliance. The following indicative observations may be drawn from Table 5.2 where \bar{u} and s are the mean and standard deviation of the observed results for each question.

Increase in Risk Intensity over past 5 years

- All 3 companies had experienced an increase in complexity and operational surprises over the previous 5 years.

State of Risk Readiness relative to King III and in terms of overall risk process in place

- The Board of QD recognized that its own level of maturity of risk management was less well developed than the Boards of BINS and VGOLD believed to be the case.

How well does the company manage its risk?

- The Boards of all 3 companies had strongly different views relating to the extent to which they believed they managed their risks effectively. The QD Board (Mean 4.0 on a scale from 1 to 11) believed they were much less effective at managing risk, than the Board of BINS believed (Mean 7.4 on a scale from 1 to 11) or VGOLD (Mean 5.7 on a scale from 1 to 11).
- This would lead to the possible conclusion that QD managed its risk less effectively, unless of course the Board of QD and VGOLD were much more confident of their risk management capability in responding to the questionnaire.

Table 5.2 Summary of the Results of the Risk Readiness Questionnaire							
		BINS		QD		VGOLD	
		u	S	u	S	u	S
Increase in Risk Intensity over past 5 years							
1	To what extent has the risk/complexity of your business increased over the past 5 years	9.1	0.9	7.3	2.9	7.7	1.5
2	To what extent has your business faced an operational surprise over the past 5 years	6.6	2.2	8.6	1.8	6.7	3.5
Average		7.9	1.6	8.0	2.4	7.2	2.5
State of Risk Readiness relative to King III and in terms of overall risk process in place							
3	What is the level of maturity of your organization’s approach to a fully functioning King III risk management process	7.3	1.8	2.9	1.5	6.3	2.1
Average		7.3	1.8	2.9	1.5	6.3	2.1
How Well the Company Manages its Risk							
4	How has the level of disclosure and reporting of risk increased over the past year	7.9	2.1	5.0	5.4	6.7	0.6
5	Are you confident the overall risks the organization faces are being effectively managed	7.8	2.3	4.3	1.9	6.0	1.0
6	Does the company maintain risk inventories to counter supply/industrial disruption	6.6	1.7	3.1	1.7	6.7	0.6
7	Do what extent does the company formally assess supply side risks	6.3	0.9	3.6	2.9	5.0	2.0
8	To what extent are top risk exposures discussed when the Board meets to discuss existing strategic plans	8.4	1.8	4.9	2.8	2.7	2.5
9	What is the extent to which existing risk exposures are considered when evaluating new strategies	8.0	2.2	6.5	1.9	5.7	3.2
10	Indicate the extent to which company has articulated its appetite for risks in the context of strategic planning	6.6	2.3	4.1	1.9	7.6	0.6
11	Indicate extent to which company has carried a formal assessment of market risk	7.1	2.1	3.8	2.3	4.0	2.6
12	Indicate extent to which company has carried a formal assessment of industry risk	7.7	2.0	3.5	1.9	3.7	1.5
13	Indicate extent to which company has carried a formal assessment of political risk	5.7	2.1	2.0	1.1	5.3	3.5
14	Indicate extent to which company has carried a formal assessment of regulatory risk	8.8	2.9	4.6	3.3	7.0	1.7
15	Indicate extent to which organization has carried a formal assessment of IT risk	9.2	1.7	4.6	2.6	5.7	1.5
16	Indicate extent to which organization uses qualitative means to assess risk	7.6	1.6	3.9	2.2	5.7	3.2
17	Indicate extent to which organization has used quantitative means to assess risk	7.8	1.2	3.4	1.9	4.0	2.0
18	In assessing risk, to what extent does the Board actively consider risk probabilities	6.9	1.8	3.6	1.8	7.3	0.6
19	Indicate extent to which Board believes existing compensation arrangements contribute excessively to risk	6.0	2.7	3.4	1.8	3.0	1.0
20	Indicate extent to which risk exposures are considered when making capital allocations to functional units	7.4	2.1	4.3	2.3	5.6	1.8
Average		7.5	2.1	4.0	2.3	5.7	2.1
Board tolerance to source dependence							
21	How would you describe your companies attitude to strategic risk (1=intolerant)	7.8	2.0	5.5	2.5	6.3	3.1
22	How would you describe your company’s attitude to operational risk (1= intolerant)	6.8	2.6	5.3	2.4	3.7	1.5
23	How would you describe your company’s attitude to financial risk (1= intolerant)	6.2	2.7	5.8	2.6	3.3	1.5
24	How would you describe your company’s attitude to market risk (1= intolerant)	6.9	2.7	7.0	2.6	6.3	1.5
Average		6.9	2.5	5.9	2.5	4.9	1.9
Influence of budgetary performance on Board attitude to risk							
25	Does your company become more risk seeking when it achieves its targets/budgets(1=no)	5.9	2.3	5.3	2.6	6.7	2.1
26	Does your company become more risk averse when it underperforms its budgets(1=no)	5.4	2.3	6.0	2.7	7.7	2.3
Average		5.7	2.3	5.7	2.6	7.2	2.2

Board tolerance to source dependence

- The Board of QD appeared to be less tolerant of risk (see heading in Table 5.2 “Board tolerance to source dependence”) than BINS (5.9 vs 6.9), which was surprising in that QD was much less prepared for risk management than BINS, which is a risk in itself. The Board of VGOLD was the most intolerant of risk (4.9).
- Interestingly there appeared to be an element of source bias, which meant that companies had varying degrees of tolerance for risk, based on the source of the risk. QD for example was more intolerant of financial risk than say its market risk, whereas VGOLD had a high degree of intolerance for its financial and operational risk, and was more tolerant of its strategic and market risk. This is deemed irrational Kahneman and Tversky (1992). The source of risk should not determine whether the company is more or less tolerant to its possible impact. BINS on the other hand appeared to adopt a more consistent approach to risk overall, irrespective of source.

In each company a Friedman Rank Test (to assess the independence of view within companies in terms of Risk Readiness (Ho: Members of each Board think similarly about risk issues within their respective companies) as shown in Table 5.3 below. Details of the rank calculations are shown in Appendices K, L and M.

Table 5.3 Friedman Rank Test for independence of view within companies in terms of Risk Readiness							
Ho: Members within each Board think similarly about risk issues							
H ₁ : Members within each Board think differently about risk issues							
Company	No Members r	Number of Questions (Table 5.2) c	No of df c-1	F _R Test Statistic	p	χ ² Test	Outcome
BINS	10	26	25	68.13	0.005	46.93 at 25 df	Reject Ho
QD	8	26	25	57.19	0.005	46.93 at 25 df	Reject Ho
VGOLD	3	26	25	36.80	0.075	36.01 at 25 df	Reject Ho
Friedman Rank Test Statistic $F_R = 12/rc(c+1) * \sum_{i=1,c} R_{.i}^2 - 3r(c+1)$ where $R_{.i}^2$ = Square of the total of ranks for question j, (j=1...c) c= number of questions=26, r= number of members in each group.							
F _R can be approximated by a χ ² distribution with c-1 df.							

Table 5.3 shows that the null hypotheses

H₀: Members within Boards think similarly about their risk readiness vs

H₁: Members within Boards think differently about their risk readiness issues

can be rejected in each case using the Friedman Rank Test. Thus

BINS Board members think differently about their risk issues $F_R > \chi^2$, 25 df, $p < .005$

QD Board members think differently about their risk issues $F_R > \chi^2$, 25 df, $p < .005$

VGOLD Board members probably think differently about risk issues $F_R > \chi^2$, 25 df, $p < .075$

Within each Board, members therefore tended to think differently about risk readiness issues relating to their company. It is interesting to consider whether the three companies chosen for this research think differently as intact Boards, about Risk Readiness, as shown in Table 5.4 below, using the Wilcoxon Rank Sum Test. From prior inspection of the data, a one-tailed test was chosen as it appeared that BINS > VGOLD > QD. Further, the data sample was sufficiently large (>10) to use the normal approximation to the Wilcoxon distribution.

A test was also carried out to assess whether the companies had similar views in respect of attitudes to source dependence. In this regard it was not possible to determine a priori whether any of the pairs of companies taken in turn showed any preference, so a 2 tailed test was used, also shown in Table 5.4 below. The sample sizes in this test were small, so the tables produced by Wilcoxon for small sample sizes were used. Details of the ranks appear in Appendix J.

In Table 5.4 the hypotheses shown were tested amongst each pair of companies taken in turn to test whether there was any similarity in views on their risk. The null and alternative hypotheses are as follows:

H₀: Pairs of companies have similar views on their level of risk preparedness vs

H₁: Pairs of companies have different views on their level of risk preparedness

Ho:BINS =QD	Ho:VGOLD=QD	Ho:BINS= VGOLD
Ho:BINS>QD	H1:VGOLD>QD	H1 BINS>VGOLD

Table 5.4 Wilcoxon Rank-Sum test for independence of view across companies in terms of Risk Readiness – see Appendix J							
Ho: Each pair of companies have similar views in terms of Risk Readiness for each group of questions as shown in Table 5.2							
Hypothesis	Ho: BINS = QD Ho: BINS > QD		Ho: VGOLD = QD H1: VGOLD > QD		Ho: BINS = VGOLD H1: BINS > VGOLD		Result
Questions	W _a Test p=.005	w _a Calc	W _a Test p=.005	w _a Calc	W _a Test p=.005	w _a Calc	
State of Risk Readiness with respect to King III , and how well the company manages its risk (These two questions combined)	Z _{0.995} =2.58	z=5.03	Z _{0.995} =2.58	z=3.88	Z _{0.995} =2.58	z=3.62	Reject all Ho
Hypothesis	Ho: BINS = QD Ho: BINS > QD		Ho: VGOLD = QD H1: VGOLD > QD		Ho: BINS = VGOLD H1: BINS > VGOLD		Result
Board tolerance to source dependence	W _a =26 n _a =n _b =4	w _a =23	W _a =26 n _a =n _b =4	w _a =20	W _a =26 n _a =n _b =4	w _a =24	Accept all Ho
<p>Wilcoxon Rank Sum Test Statistic w_a = the sum of ranks of company a. For larger samples $n_a > 10$ use the normal approximation $\mu_a = n_a(n_a+n_b+1)/2$, $\sigma_a = \sqrt{(n_a \cdot n_b (n_a+n_b+1)/12)}$.</p> <p>$P(W_a > w_a) \approx P(Z > z)$ where $z = (w_a - \mu_a) / \sigma_a$ and Z is the relevant percentile of the standard normal distribution .</p> <p>For smaller samples where $4 \leq n_a \leq 10$ use the Wilcoxon Rank-Sum Table.</p>							

As can be seen from Table 5.4 in terms of:

State of Risk Readiness BINS > QD, VGOLD > QD, BINS > VGOLD $P(Z > z) < .005$

Board tolerance to source dependence BINS = VGOLD = VGOLD, $P(W_a > w_a) > 0.005$

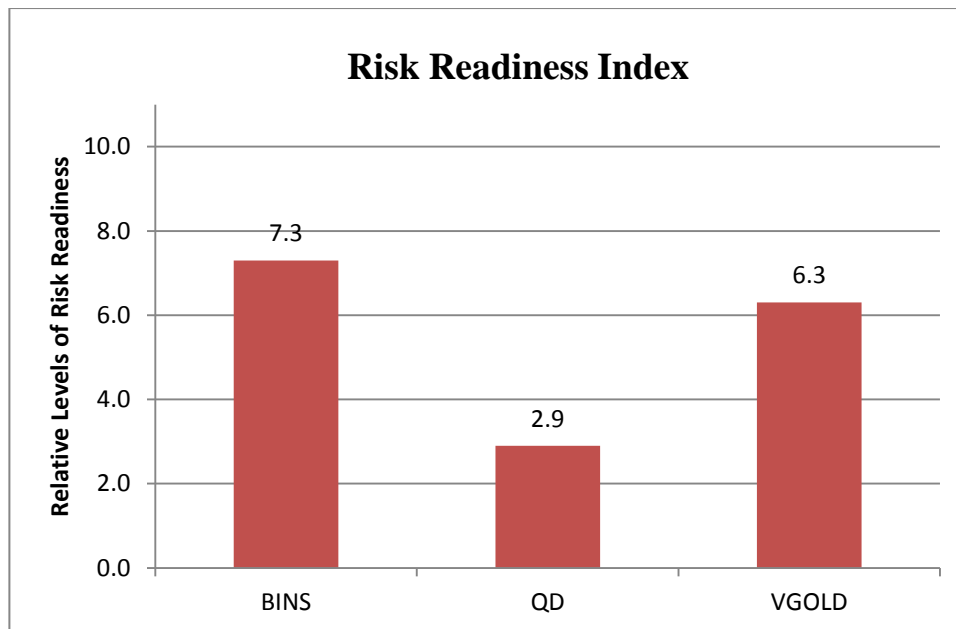
The following Table 5.5 indicates the reasons the different Boards members gave for barriers which acted as an impediment to having an effective risk management system in place.

Table 5.5 Barriers to implementing an effective ERM strategy			
Which of the following barriers most act as an impediment to implementing an effective ERM strategy	BINS	QD	VGOLD
Competing priorities	3	1	0
Insufficient resources	4	3	0
Lack of perceived value	0	0	1
Perception ERM adds to bureaucracy	2	1	2
Lack of Board or senior executive ERM leadership	1	3	0
Legal or regulatory barriers	0	0	0
Total Number of Members (*1 member failed to answer)	10*	8	3

The above Table 5.5 indicates the number of members of each Board who indicated various reasons for their lack of ERM (Enterprise Risk Management). While most Board members saw the value of an ERM strategy, QD blamed their lack of leadership in ERM, and BINS members cited competing priorities and insufficient resources as the main reasons for their lack of ERM. VGOLD was more concerned about the cost of additional bureaucratic processes as being a limiting obstacle to better ERM.

The relative levels of risk readiness by each Board, taken from Table 5.2 “How Well does Your Company Manage its Risk”, are shown in Figure 5.2 below. These relative levels will in future be referred to as the **Risk Readiness Index (“RRI”)**.

Figure 5.2 Relative levels of Risk Readiness between BINS, QD and VGOLD derived from the Risk Readiness Questionnaire Table 5.2 Question 3 Risk Readiness



From this Figure 5.2 it is clear that while QD (Electronics Manufacturer) had virtually no risk management system in place, both VGOLD (Gold Mining Company) and BINS (Insurance Company) were far more advanced in terms of their risk management processes. It is surprising to note that both BINS and VGOLD operated in separate yet highly regulated industries, yet both companies considered themselves relatively unprepared in terms of their risk readiness. Under King III (2009) both BINS and VGOLD should be close to 11 in terms of their ratings, and while QD is in a relatively unregulated industry, it nevertheless operated well below acceptable levels of risk management in terms of King III (2009). While King III applies equally to all industries and size of company, it is generally accepted that smaller regulated companies will take longer to reach full compliance. However companies such as BINS operating as an insurance company ought to be further advanced in terms of its compliance.

5.3 The Results of the Risk Aversion Questionnaire

The detailed results of the Risk Aversion Questionnaires are shown in Appendices F 1, F 2 and F 3. The Risk Aversion questions attempted to establish whether members of the respective Boards were either risk averse, risk neutral or risk tolerant when faced with

possible events leading to either gains or losses. Members were asked to choose between a series of two hypothetical projects, the one project being low risk with a low payout/loss and the other being high risk with a high payout /loss. The purpose of this questionnaire was to establish if there were any consistent trends across the different Boards. The summarised results of the Risk Aversion Questionnaire are shown in Table 5.6 below.

Table 5.6 Showing how the Boards behave in terms of Risk Aversion					
Entity	BINS	QD	VGOLD	CEO's only*	Individuals Kahneman and Tversky (1992)
No of respondents	11	8	3	8	26
Entity response to a possible gain event	Risk Neutral	Risk Neutral	Risk Averse	Risk Neutral	Risk Averse
Entity response to a possible loss event	Risk Tolerant	Risk Tolerant	Risk Neutral	Risk Tolerant	Risk Tolerant

In Table 5.6 are also included, for interest, the averaged results of the CEO's* (BINS, QD and VGOLD CEO's, plus the 5 CEO's interviewed in the pilot study). The results Kahneman and Tversky (1992) predicted for individuals are also shown in the last column. Prospect Theory predicts that individuals will be risk averse when facing gains, and risk tolerant when facing losses. The results from Table 5.6 are:

- when facing an event leading to possible gains, BINS, QD and the CEO group appeared to be risk neutral, that is they did not exhibit risk tolerant or risk averse behaviour, unlike VGOLD which appeared to exhibit risk averse behaviour, as predicted by Prospect Theory.
- when facing losses all entities exhibited risk tolerant behaviour, this time in line with Prospect Theory, except for VGOLD which appeared to adopt a risk neutral approach.
- this was also a surprising result in that all 4 groups of Board members (except for VGOLD) operating across different industries, at a different level of risk

management maturity and facing different issues were risk neutral when facing gains.

- by contrast the Boards were risk tolerant when losses loomed, in line with Prospect Theory. Thus the Boards appeared to be realistic when facing gains and tended not to take riskier options than necessary, yet would consider risky solutions when facing losses. This observed natural tendency (when facing losses) for the Boards to adopt a riskier stance than they otherwise might (perhaps as a desperate measure to ensure the survival of the business) may in itself be the undoing of the business ultimately leading to its collapse. The Boards therefore ought to recognise this tendency and evaluate their options more carefully when facing losses.

5.4 Results of the Risk Bias Questionnaire

The detailed results of the data and the processing models used to produce the results set out in this section are shown in Appendices G 1, G 2, G 3 and G 4. There are 2 sets of results emerging from this questionnaire, as discussed in Section 5.4.1 below.

5.4.1 The Probability Weighting Function and the Value Function

Each will be dealt with separately in turn. The summarised results are as follows:

The Probability Weighting Function

The probability weighting function simply defines the relationship between a true probability, and the subjective perceived value of that probability by an independent observer, in this case the member of a Board. Whereas the Risk Aversion Questionnaire provides a hypothetical choice for the member when faced with 2 risky alternatives, the Risk Bias Questionnaire is able to measure the degree of bias by asking the member to attach a monetary value to a series of hypothetical projects.

Kahneman and Tversky (1992) proposed that individuals distort their view of actual probabilities when faced with risk and uncertainty, and the extent of this bias varies with the actual given probability, and whether the observer is in a mental state expecting either a positive or negative outcome, such as a gain or loss. (For example a low probability of winning the Irish Sweep is optimistically viewed by many, however unlikely a positive outcome may be).

The results shown in Table 5.7 indicate that:

- all 3 Boards underestimated risk irrespective of whether the risk was a high or low probability event, when the outcome was expected to be positive (gain). Thus when a positive outcome was expected, all Boards were more pessimistic or cautious than they needed to be. An example of this irrational behaviour may be the Board's attitude to an uncontested tender submission where there is a high probability of winning the tender on favourable terms, and the Board fails to prepare sufficiently well for its outcome;
- similarly, the Boards also underestimated risks of high probability events, when the outcome was expected to be negative (loss). In this case when a highly probable negative outcome was expected, Boards were more optimistic than they ought to have been, and would possibly devote insufficient attention to dealing with the consequences;
- the notable exception was that BINS, unlike the other 2 Boards, overestimated risk events when there was a low probability risk event and the outcome was expected to be a loss. This divergence of behaviour faced with low probability outcomes was probably one of the most important distinctions in risk behaviour between the 2 Boards. The occurrence of multiple low probability high impact events can cause companies to fail. BINS was pessimistic about such events and was therefore more able to anticipate such events.
- The data derived clearly indicates that members of the 3 Boards as a group did not exhibit the same characteristics as those derived by Kahneman and Tversky (1992) for individuals when facing low probability gains.

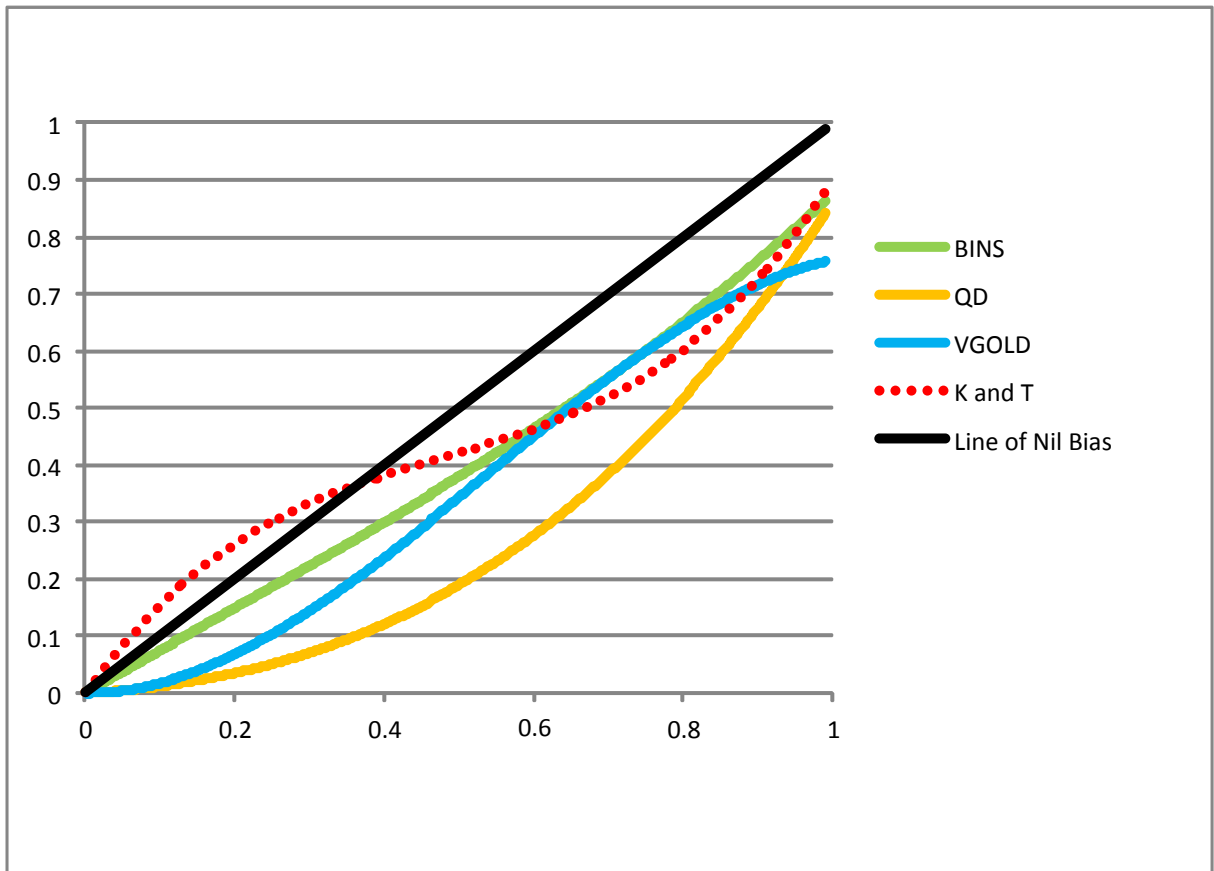
The highlighted text in Table 5.7 indicates where entities did not subscribe to the main views of the sample taken as a whole.

The results of the Risk Bias Questionnaire are shown in graphic detail, in Figures 5.3 and 5.4 below, to highlight the degrees of distortion of risk perception over the full range of probabilities [0, 1].

Table 5.7 How Boards responded to low and high probability events when faced with gains and losses respectively (probability weighting function)				
Entity	BINS	QD	VGOLD	Individual (K and T, 1992)
Entity response to low probability gain event	Board underestimates risk	Board underestimates risk (pronounced)	Board underestimates risk	Individual overestimates risk
Entity response to high probability gain event	Board underestimates risk	Board underestimates risk (pronounced)	Board underestimates risk	Individual underestimates risk
Entity response to low probability loss event	Board overestimates risk	Board underestimates risk (pronounced)	Board underestimates risk	Individual overestimates risk
Entity response to high probability loss event	Board underestimates risk	Board underestimates risk (pronounced)	Board underestimates risk	Individual underestimates risk

In Figure 5.3 the black line indicates the line of nil bias. Ideally Boards' perceptions of risk should lie along this line; Boards ought to see risks for what they are. The red dotted line indicates the predictions made by Kahneman and Tversky (1992). It is evident from Figure 5.3 that when facing events which lead to a possible gain, all 3 companies underweighted both high and low probabilities. QD had the most distorted view of probability, deviating most from the black line, particularly at the 60% to 80% probability level. Thus when the prospect of gain is between these levels, the QD Board will most underestimate risk. For example if the true risk is 60%, the Board would assume that there is only a 30% probability of the event occurring, which represents a considerable degree of distortion. As most strategic business decisions are likely to lie within this range of probabilities, QD was likely to undervalue most positive projects. This may be due to a history of failed projects which appeared promising at the time. Overall, QD and VGOLD appeared to be more conservative than BINS.

Figure 5.3 The probability weighting function for positive prospects

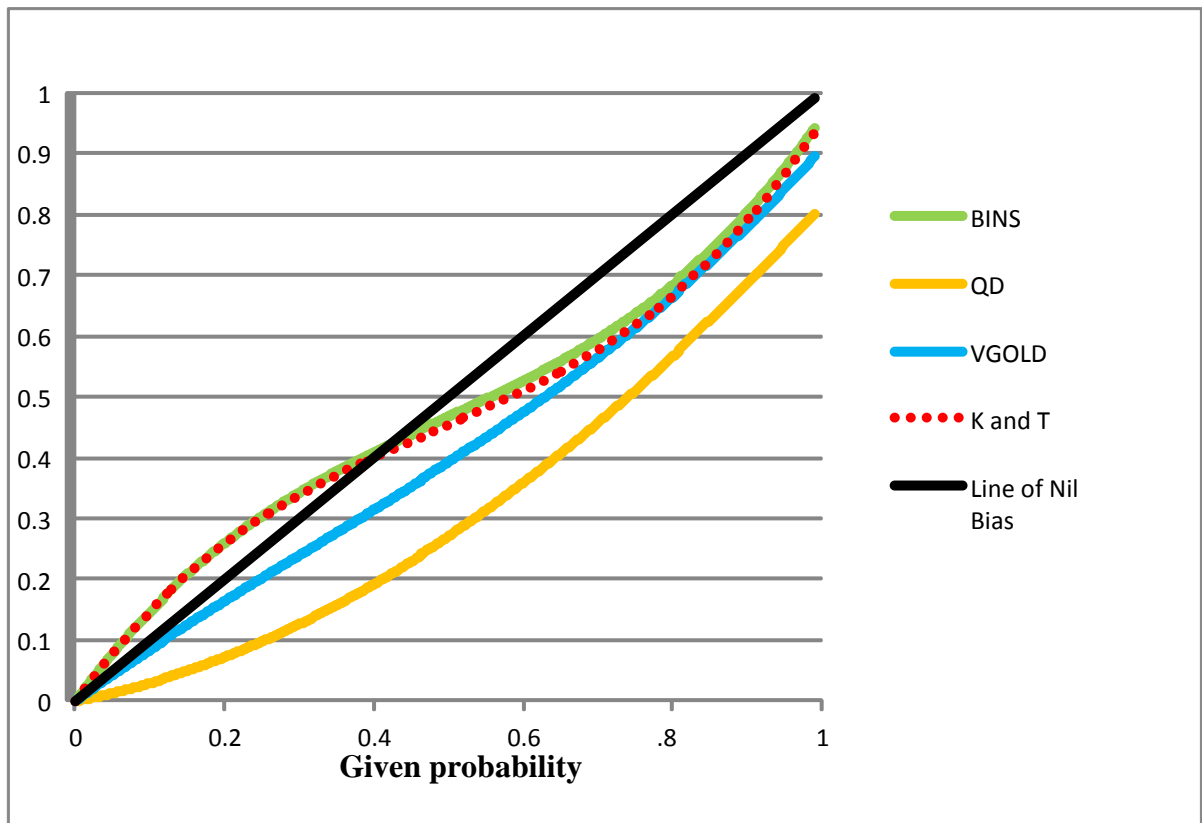


The x-axis is the given or true probability, and the y-axis is the probability construed by the Board.

Figure 5.4 below shows how Boards react to risky situations which are likely to lead to losses. An example of such a situation may be a company sued for non-performance; there will be some cost to the company, either for example a full damages settlement, or at best potentially costly litigation.

It is very interesting to note that when facing potentially loss making events, BINS distorted probabilities almost exactly in line with the predictions of Kahneman and Tversky (1992) below, where the BINS weighted probability curve lies almost perfectly on the Kahneman and Tversky derived curve. There are 2 points of interest to note. When faced with risky loss making situations, BINS behaved almost exactly as predicted by Kahneman and Tversky (1992). The other 2 Boards underweighted probabilities at all levels, though the level of distortion was less pronounced than when facing gains. This means that QD and VGOLD underestimate risks in the face of losses, resulting perhaps in a more relaxed view than they ought to adopt, particularly at the mid-range probabilities.

Figure 5.4 The probability weighting function for negative prospects



The x-axis is the given or true probability, and the y-axis is the probability construed by the Board.

Being unduly conservative is, however, not necessarily a business virtue, and may be a risk in itself. The Capital Asset Pricing Model (Jensen, Black, Scholes, 1972) states that the return on an investment is proportional to its beta, defined as the systematic (non-diversifiable or necessary) risk of the investment (See Glossary). If a Board habitually underestimates the systematic risk of an investment, it may unintentionally be avoiding risky projects whose betas may lend themselves to good returns. Similarly, if the Board habitually underestimates risks when losses loom, then there may be a tendency to prepare inadequately for such eventualities.

The Value Function

The Reader will recall that the Value Function (Kahneman and Tversky, 1992) proposes that individuals exhibit behavioural characteristics when faced with risky choices as shown in the Prospect Curve Figure 2.3. Individuals will attach a perceived Value or Utility to a

given Gain. Concavity of the curve above the x-axis indicates risk aversion facing positive gains suggesting that recipients are considered to become increasingly circumspect and attach increasingly lower values to marginal gains. Similarly, below the x-axis the curve is convex, indicating risk tolerance. Whereas the Probability Weighting Function discussed in the previous section highlights Boards' bias when faced with probabilistic decisions, the Value Function indicates how Boards, in this research, attach perceived Value (or Utility) to the expected Gains from risky projects.

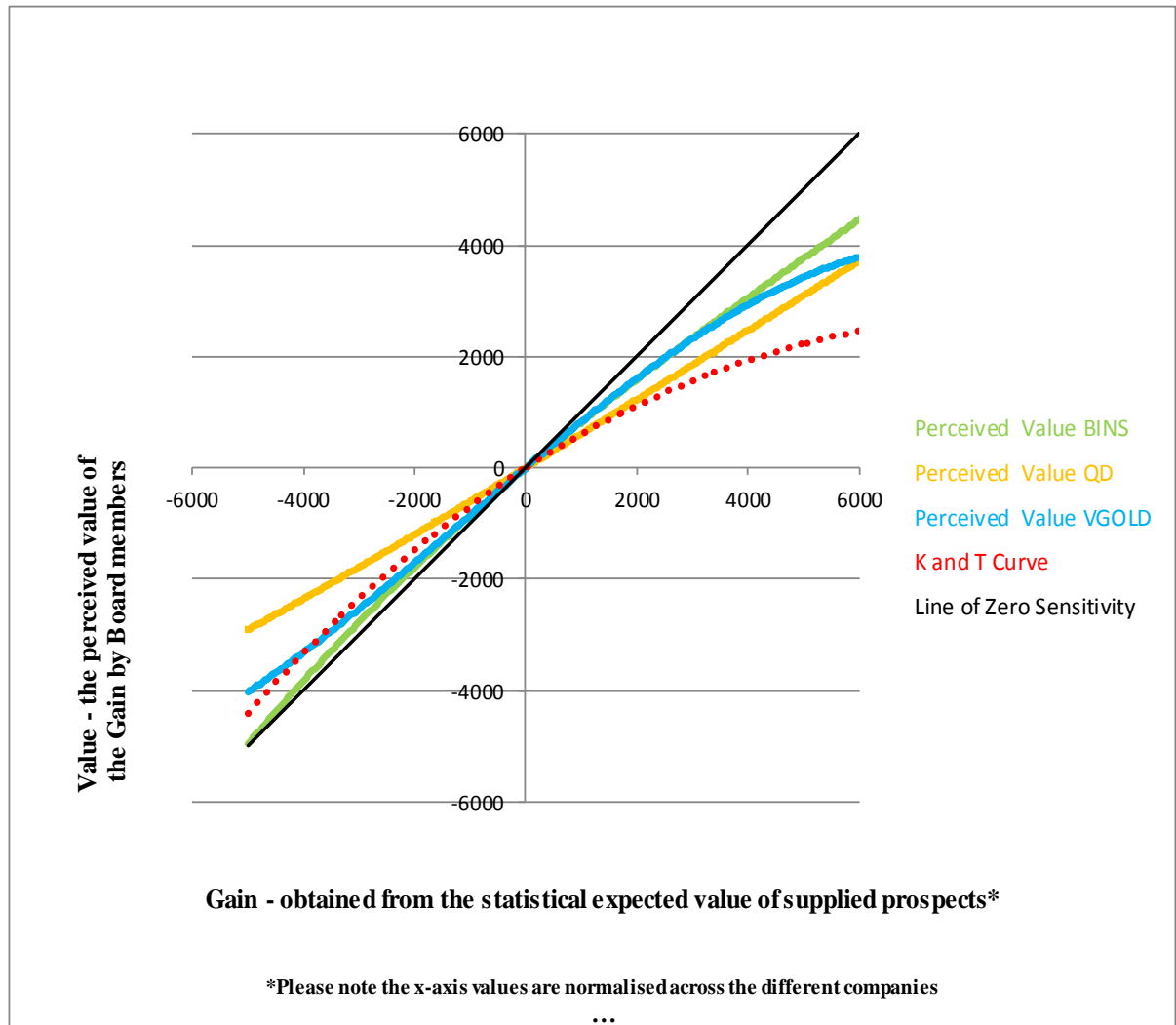
Figure 5.5 below provides a graphical indication of the Value Function derived from the results of the Risk Bias Questionnaire (Appendix B). The black line indicates the line of Zero Risk Sensitivity to losses and gains. Boards which adhered to this Zero Risk Sensitivity line would for example apply the same risk discount rates to all projected potential cash flows irrespective of the size of such cash flows; all projects would carry equal weight irrespective of the size of the project. For positive gains the curves of all companies lie below this line, and above the Prospect line (Kahneman and Tversky, 1992). It is possible to conclude from this data that the Boards were slightly risk intolerant facing gains, but not as risk intolerant as individuals might have been.

Similarly below the x-axis the curves of all companies lay on, or above, the line of Zero Risk Sensitivity, indicating that generally Boards were risk tolerant when facing negative gains (losses).

QD was most risk averse facing gains, and most risk tolerant facing losses.

Furthermore, as discussed in Chapter 2, Kahneman and Tversky identified a behavioural phenomenon they referred to as "loss aversion", described as the propensity to bear losses with far greater discomfort than the sense of comfort or elation from a similar sized gain. In graphical terms evidence of loss aversion would occur if the slope of the curve immediately below the origin were far steeper than above the origin. From Figure 5.5 it is clear that there is no evidence of loss aversion.

Figure 5.5 The value weighting function showing how the Boards perceive the value (utility) of risky choices against expected gains



*In Figure 5.5 the Kahneman and Tversky curve does not exhibit a convex shape perhaps *because the size of the Prospects proposed to Board members lay within practical financial limits* relevant to the size of each company. There was no point in presenting Prospects to companies which lay outside their financial limits. Furthermore it was necessary to scale the prospect values to suit the size in terms of financial turnover to make the results between companies of different sizes comparable.

In this Figure 5.5 it is possible to draw broad conclusions relating to the degree of sensitivity to gains and losses by assessing the divergence (from the line of Zero Sensitivity) of the Boards' assessment of Value relative to given Gains. The greater the divergence of the Value from the black line, the greater the degree of risk aversion (for gains) and the greater the degree of risk tolerance (for losses). The conclusions which may be drawn from Figure 5.5 are tabled below in Table 5.8.

Table 5.8 Characteristics of Choice when faced with Risky Prospects				
Characteristic of choice	BINS	QD	VGOLD	K and T
Facing gains	Linear relationship above the origin between perceived gains and value indicating moderately increasing sensitivity to increasing gains (moderately risk averse facing gains)	Linear relationship above the origin between perceived gains and value indicating moderately increasing sensitivity to increasing gains (moderately risk averse facing gains)	Linear relationship above the origin between perceived gains and value indicating moderately increasing sensitivity to increasing gains (moderately risk averse facing gains)	Concave curve above the origin indicating increasing sensitivity to risk as gains increase (risk averse facing gains)
Facing losses	Linear relationship below the origin between perceived gains and value indicating no sensitivity to increasing losses (neutral risk stance facing losses)	Linear relationship below the origin between perceived gains and value indicating moderately diminishing sensitivity to increasing losses (moderately risk tolerant facing losses)	Linear relationship below the origin between perceived gains and value indicating slightly diminishing sensitivity to increasing losses (slightly risk tolerant facing losses)	Convex curve below the origin indicating diminishing sensitivity to risk as losses increase (risk tolerant facing losses)
Loss aversion	No evidence	No evidence	No evidence	For individuals there is a marked degree of loss aversion; the pain of a given loss is about 2.25 times more intense than the elation of a similar gain.

If these results accurately reflect the way Boards in general would behave when faced with risky choices, the ramifications for Boards are as follows:

- Boards are slightly risk averse as the size of a potential project increases. This was borne out by the CEO of BINS Insurance who stated that “it is not the size of project that matters (within reasonable limits) but the opportunity for good ROI’s (Returns on Investment) that is important”. Thus for the types of projects faced by BINS say, the degree of risk aversion is not dependent on project size, but on return. There is a consistent approach (linearity) across all positive project sizes indicating that while Boards attach a premium to risk, they do not become increasingly risk averse as the project size increases.
- BINS and VGOLD were slightly risk averse for losses, and there was no evidence of increasing risk tolerance as the size of the project increased, contrary to Kahneman and Tversky (1992). There was some indication that Boards treated losses and gains differently.
- QD on the other hand was more risk averse facing gains, and exhibited greater risk tolerance facing losses. Thus QD would possibly underestimate the full gravity of the consequences of a loss making position, and ignore safeguards to protect itself fully.
- Loss aversion, observed by Kahneman and Tversky (1992, p.168) suggests that for individuals “losses loom larger than gains”. This research shows that the opposite applies. That is that Boards appear to be slightly risk averse when facing gains (in a sense casting aside any caution) and are more risk tolerant when facing losses than predicted by Kahneman and Tversky (1992). This means Boards may underestimate the true value of losses, leading to potentially serious consequences in terms of providing inadequate funding for such losses, and not acting quickly enough to develop countermeasures.

Table 5.9 below indicates the results of a methodological triangulation validity comparison between the results of the Risk Aversion Questionnaire and the results of the Risk Bias Questionnaire. Facing gains, we can conclude that there is evidence for believing that Boards are generally neutral or risk averse, while facing losses there is evidence of Boards being neutral or risk tolerant. The highlighted sections show consistency of results across the 2 techniques mentioned. The purple shading indicates strong consistency of results. The green shading indicates mild consistency of results across the 2 techniques.

Whether the extent of Risk Readiness is an influence in the way Boards respond to Risk Aversion will be examined later.

Table 5.9 Summary of the methodological triangulation to assess the validity of Board's risk aversion behaviour					
Entity	BINS	QD	VGOLD	Pilot Study	Individuals (K and T)
Entity attitude to risk when facing an event leading to potential gains					
Risk Aversion Questionnaire (Table 5.1)	Risk Neutral	Risk Neutral	Risk Averse	Averse	Risk Averse
Risk Bias Questionnaire (Table 5.8)	Moderately Risk Averse	Moderately Risk Averse	Moderately Risk Averse	Neutral	Risk Averse
Entity attitude to risk when facing an event leading to potential losses					
Risk Aversion Questionnaire (Table 5.1)	Risk Neutral	Risk Tolerant	Neutral	Averse	Risk Tolerant
Risk Bias Questionnaire (Table 5.8)	Risk Neutral	Risk Tolerant	Slightly Risk Tolerant	Neutral	Risk Tolerant

5.5 Practical problems with the data analysis

During the course of the research several practical problems arose, particularly in applying Prospect Theory. The problems will be fully discussed in this Section 5.4:

5.5.1 Prospect Theory

This research mainly concentrated on the original Prospect Theory developed by Kahneman and Tversky (1979), and not the subsequent Cumulative Prospect Theory developed later (Kahneman and Tversky 1992). While the concept of Cumulative Prospect theory was utilised insofar that there are distinct probability weighting functions depending on whether the outcome is positive or negative, cumulative probabilities were not derived due to paucity data. There were insufficient data points to arrive at meaningful results. This is unlikely to have had any significant impact on the results or conclusions, which are in any event very broad and intended to be indicative.

5.5.2 Scaling

Kahneman and Tversky used uniform bets to develop their theories, that is to say that each cohort of respondents was given the same set of questions using the same monetary values. In this research the size of company varies. It was thus necessary to scale the monetary values in an attempt to arrive at consistent comparable responses across all 3 companies. The numbers used in the Risk Aversion Questionnaire were chosen to reflect high value, medium value and low value projects relative to the size of each company. Fortunately in the case of QD and BINS the size of companies was similar. However in the case of VGOLD, a Gold Mining Company, the company was around 8 times larger. Conveniently, their revenue is dollar based and the Rand/Dollar exchange rate was 8 to one. Thus the questions were presented to the VGOLD Board in Dollar terms. This meant that a single set of numerical questionnaires could be applied to all three companies.

5.5.3 Negative probabilities and profit margin

When asked to attach a cash value to a set of prospects, often the respondent would provide an answer which gave rise to a negative probability. For example in the first question A of the Risk Bias Questionnaire respondents were asked to attach a value to a project with payoffs of 10m and 3m with probabilities of 20% and 80% respectively. The minimum payoff in this example is 3m, and maximum payoff is 10m. The statistical expected value is 4.4m. Some respondents gave answers well below 3m. The theoretical probability which provides a payoff of any result below 3m is negative, which is clearly undefined. In these cases the minimum value which did not give rise to a negative probability was chosen. Part of the reason for this choice by respondents was due to the “risk” profit margin built into the respondents’ answers. The subjective inconsistency built into such profit margins by respondents within and across companies is a flaw in the Kahneman and Tversky (1979, 1992) methodology as applied to this research.

5.5.4 Mean vs. median

Kahneman and Tversky (1992) used the median results from the responses derived from their student populations. In this study the median was also used. A test was done to check that there was no significant difference in results from using the mean. It must however be pointed out that the mean of a set of results from a Board may be more subject to bias than a set of median results from a group of students whose decisions are completely independent. In a Board some members are likely to be far more influential than others, and

the CEO may have the casting vote. The degree of bias may change with different project types or issues where the knowledge or conviction of Board members vary. This bias is also highly likely to vary across Boards. Thus neither the median nor the arithmetic mean may reflect the decision making outcome of the group.

5.5.5 Mixed prospects

For mixed prospects, that is where the questions in the Risk Bias Questionnaire have a positive and a negative payoff, a decision needs to be taken as to whether the prospect is indeed positive or negative. In this study it was assumed that the sign of the expected value of the prospect determined whether it was positive or negative.

5.6 Summary

In this Chapter 5 the results of the Risk Readiness, Risk Aversion and Risk Bias Questionnaires were presented. The results can be summarised as follows:

- The 3 companies exhibited varying degrees of Risk Readiness, with BINS being most Risk Ready, and QD being least Risk Ready.
- Companies exhibited varying degrees of Risk Aversion facing gains with all 3 companies varying between neutrality and slight risk aversion. Facing losses, the results were more clear cut, with BINS and QD being risk neutral, and QD exhibiting risk tolerant tendencies.
- The Risk Bias Questionnaire showed that for all 3 companies there was a linear relationship between gains and perceived value suggesting that Boards did not face diminishing sensitivity in the face of losses and gains to the extent predicted by Prospect Theory (Kahneman and Tversky, 1992).
- There did not appear to be evidence of loss aversion, whereby Boards would value gains and losses differently.

This concludes the summary of the results of the Risk Readiness, Risk Aversion and Risk Bias Questionnaires. In Chapter 6 below the results of the RepGrid analysis will be discussed. Chapter 7 deals with further theory development. In Chapter 8 the main results will be summarised.

Chapter 6. Main Findings and the Repertory Grid Analysis

In Chapter 5 the results of the questionnaires were presented and discussed. In this Chapter the results of the RepGrid interviews are presented. The Chapter will be broken down into the following sections:

- Results of the RepGrid analysis
- Content analysis of the RepGrid (Jankowicz, 2004)
- Differential Analysis of the 3 Boards
- Further analysis of Characteristics obtained from the RepGrid analysis

6.1 Results of the RepGrid Analysis

As discussed in techniques section of the Methodology Chapter 3, and the Pilot Study Chapter 4, each member of the Board of QD, BINS and VGOLD were separately interviewed, and the Repertory Grid method was used to elicit each member's personal constructs relating to how they made sense of risk in their businesses. Each member was presented with a number of permutations of 3 elements of risk (out of a total of 11 as described in Chapter 4), and the Kellyan question posed was:

“When you think of risk in your company, how do 2 of these elements of risk presented to you vary from the third element, and in what way”.

6.2 The Content Analysis process

In conducting the Content Analysis (Jankowicz, 2004), the QD Board (lowest level of regulatory compliance) and the BINS Board (highest level of regulatory compliance) were chosen in order to maximize the possible differences in results. At this stage VGOLD (medium level of compliance) was excluded from the analysis. In the Content Analysis phase 208 constructs were elicited using the 11 elements of risk described earlier. Of the 208 constructs, 1 miscellaneous construct was discarded, 24 were supplied (mainly the supplied construct of the form “Overall a greater source of risk to the business” (19 constructs) and “Overall we manage this risk well” (5 constructs) leaving 183 elicited constructs. These constructs were then Content Analysed (Jankowicz, 1994), by undertaking a process of pooling all the constructs and grouping them in similar clearly defined Categories to facilitate comparison across the 2 companies. In order to ensure reliability of the Categories the following steps were taken:

1. A common set of Categories was defined by the present author; and 2 separate judges were requested to assist in the categorisation and definition process.
2. The first judge (referred to as PC) - a retired businessman - was requested to separately categorise these constructs, and provide category definitions. These category definitions were used as a benchmark for a further reliability step.
3. A second judge (referred to as DM) – a management consultant – was also separately requested to categorise the constructs. The comparison between the author's content analysis and those of DM are shown in Appendix H 1.
4. The results of DM were compared with those of the author, and two reliability tests were carried out to establish the degree of reliability of the categorisation as shown in Table 6.1 below:
 - Cohen's Kappa (Perrault and Leigh, 1989, p. 137). This test yielded a reliability score of 82% which was lower than an acceptable score of 90%.
 - Perrault and Leigh measure (Perrault and Leigh, 1989, p.140) yielded a reliability score of 90%, in line with the recommended minimum level of 90%.

Table 6.1 Reliability assessment tests (Perrault and Leigh (1989))	
N= Total number of judgements agreed by the judges	183
Fa=Number of judgements on which judges agree	152
k= the total number of Categories (see Table 6.2)	13
Fc = Number of agreed judgements which are expected by chance (N/k)	14
Cohen's Kappa $K = (Fa - Fc) / (N - Fc)$.82
Leigh and Perrault's $I = \sqrt{(Fa/N - (1/k))(k/(k-1))}$.90

5. The author and DM then negotiated a final selection of Categories, their definition, and finally the allocation of constructs to each Category. The benchmark categorisation of PC was referred to in this discussion. The author and DM were able to reach total agreement (100% on the categorisation and its definitions; this process took around 5 working days). These final Content Analysed results are shown in Appendix H 2. It is important to note that the Categories and Construct definitions were fed back to Board members individually, and also on a Group

basis. The report of the intact Boards feedback is discussed in more detail in Section 6.8 below.

Table 6.2 Categories derived from the reliability exercise, and their definitions

Category	Positive Pole	Definition	Negative Pole
Actual Control Achieved	Board is in greater control over these risks	Indicates the extent to which the Board is in control over the risk in terms of putting in place measures to bring the risk to within manageable tolerance levels	Board has less control over these risks
Actual Control Potential	The risk is identifiable, predictable, stable and independent, and potentially highly controllable and easy to manage as part of an ERM strategy	Measures the extent to which management feel that it is possible within the reasonable and necessary level of resources available to the company to identify and control the risk to within acceptable tolerance levels	The risk is not controllable and is difficult to manage as part of an ERM strategy
Controllability	Board should be more actively involved in controlling the risk	Defines the extent to which members of the Board feel that it should have greater control over the risk, but can't due to possible blind spots, resource limitations, or the inability to manage, or the complexity of managing, the risk	Board does not need to have more control over the risk
Potential Riskiness	High potential impact on viability of company	Indicates the extent to which the source of risk presents a real danger to the profitability or on-going viability of the firm	Low potential source of risk to the business
Knowledge	External knowledge is important to manage the risk	To what extent knowledge of the external environment necessary in order to mitigate risks	External knowledge is less important to manage the risk
Actual Cost	High cost to manage this risk	Indicates the extent to which additional financial resources require to be allocated to manage the risk	Does not need high cost outlay to manage risk
Resources	Company requires a high degree of operational input to manage risk	The extent to which there are sufficient suitable skilled operational staff within the current business to control and mitigate risk	High operational input is not required to manage risk
Return on cost	High return on cost of mitigation	Indicates the extent to which the resources allocated to risk management produce a return in line with the systematic risk cost of capital used by the firm in allocating funds to capital projects in the normal course of its business.	Low return on cost mitigation
Term of Risk	Long term risk	Is this risk a short term risk, or a long term risk	Short term risk
Style and Approach	Management style and company attitude has a high impact on the risk of the business	Indicates the extent to which the persona of the business affects the company's risk in terms of levels of risk tolerance and aversion and attitudes towards responsibility, discipline, reporting, team work and loyalty to the company.	Management style and company attitude has a low impact on the risk of the business
Freedom of Choice	High degree of choice in selecting best risk mitigation strategy	What choice does the Board have in selecting an appropriate risk mitigation strategy to deal with risk.	Little choice in selecting best risk mitigation strategy
Techniques	Higher levels of technology can reduce risk	Indicates the extent to which the introduction of greater technology, and less reliance on manual intervention, can reduce risk in the organisation.	Higher levels of technology will not reduce risk
Consensus	High degree of consensus on the nature of the risk facing the company	Indicates the extent to which Board members agree on the type of risk, its frequency and potential impact on the company	Low degree of consensus on the nature of risk

6.3 Results of the Content Analysis

The Constructs derived from the RepGrid interviews are shown in Appendices H 3 to H 5 split into the Categorisations as summarised with their definitions in Table 6.2 above.

The reader's attention is drawn to the fact that the Categorisation of constructs was based on the data from the BINS and QD interviews. The constructs from the VGOLD interviews were subsequently allocated to their respective Categories, as shown in Table 6.3 below, which also shows the percentage range of total constructs split into 3 groups (Intense, Moderate and Slight) with the order of constructs rearranged according to the priority of each Board.

Table 6.3 Percentages and Cumulative Percentages of Total Constructs										
BINS			QD			VGOLD				
% Cum%			% Cum%			% Cum%				
Actual Control Achieved	26.0	26.0	Controllability	20.7	20.7	Actual Control Achieved	40.0	40.0	Intense	
Actual Control Potential	18.8	44.8	Actual Control Achieved	16.1	36.8	Controllability	13.3	53.3		
Potential Riskiness	10.4	55.2	Actual Control Potential	16.1	52.9	Potential Riskiness	13.3	66.6		
Controllability	9.4	64.6	Potential Riskiness	11.5	64.4	Actual Control Potential	10.0	76.6		
Knowledge	8.3	72.9	Actual Cost	9.2	73.6	Actual Cost	10.0	86.6	Moderate	
Return on Cost	6.3	79.2	Resources	8.0	81.6	Term of Risk	6.7	93.3		
Term of Risk	5.2	84.4	Knowledge	5.8	87.4	Knowledge	3.3	96.6		
Resources	4.2	88.6	Style and Approach	5.8	93.2	Return on Cost	3.3	100.0		
Actual Cost	3.1	91.7	Return on Cost	2.3	95.5	Resources	0.0	100.0		
Freedom of Choice	3.1	94.8	Freedom of Choice	2.3	97.8	Freedom of Choice	0.0	100.0	Slight	
Techniques	3.1	97.9	Term of Risk	1.1	98.9	Style and Approach	0.0	100.0		
Consensus	2.1	100.0	Techniques	1.1	100.0	Techniques	0.0	100.0		
Style and Approach	0.0	100.0	Consensus	0.0	100.0	Consensus	0.0	100.0		
Total	100.0			100.0			100.0			

Table 6.3 shows the order of importance the various Boards attach to the Categories when considering risk issues, split for convenience into Intense, Moderate and Slight

emphasis. All 3 Boards attach most importance to a common set of 4 Categories, though the order and emphasis is dissimilar. These Categories are:

- Actual Control Achieved
- Actual Control Potential
- Potential Riskiness
- Controllability

There is virtually no emphasis on the Slight Categories. Table 6.3 shows that while Boards considered a broad range of issues when faced with risk, they appeared to focus most intensely on a consistent narrow range of Risk Categories in trying to make sense of their risk.

6.4 Differential Analysis across all 3 boards

After completing the Content Analysis and arriving at the results in Tables 6.3, the RepGrid results from the VGOLD Board interviews were similarly categorised according to the Table 6.2 Definitions of Categories derived from the Content Analysis. This procedure resulted in the following results for all three Boards, as summarised in Table 6.4 below.

Within each category a Z test was carried out to see whether there were any significant differences in views between BINS, QD and VGOLD relating to their perceptions of risk according to the Categories defined in Table 6.2 above, by testing a series of hypotheses about the difference in population proportions between the 3 companies, as shown more fully in Appendix H 6, and as tabulated below in Table 6.4.

In Table 6.4, it was not clear a priori in which direction the relative proportions of constructs in each Category lay, so a series of 2 tail Z tests were carried out to establish whether the proportions in each Category were different.

6.4.1 Testing for relative proportions of Constructs

Test between BINS and QD to assess whether the proportions in **each** Category were different:

Ho: BINS = QD

H₁: BINS ≠ QD

Test between QD and VGOLD to assess whether the proportions in **each** Category were different:

Ho: QD = VGOLD

H₁: QD ≠ VGOLD

Test between BINS and VGOLD to assess whether the proportions in **each** Category were different:

Ho: BINS = VGOLD

H₁: BINS \neq VGOLD

Table 6.4 Summary of the Construct Categories indicating whether there is similarity between the companies in terms of their thoughts on risk									
Category	Total Constructs			Percentages of Total Constructs			2 Tail Z tests See Appendix H 6		
	B	Q	V	B	Q	V	Ho: B=Q	Ho: Q=V	Ho: B=V
Actual Control Achieved	25	14	12	26	16	40	Accept	Reject p<.01	Accept
Actual Control Potential	18	14	3	19	16	10	Accept	Accept	Accept
Controllability	9	18	4	9	21	13	Reject p<.015	Accept	Reject p<.01
Potential Riskiness	10	10	4	10	11	13	Accept	Accept	Accept
Knowledge	8	5	1	8	6	3	Accept	Accept	Accept
Actual Cost	3	8	3	3	9	10	Accept	Accept	Reject p \approx .05
Resources	4	7	0	4	8	0	Accept	Accept	Accept
Return on Cost	6	2	1	6	2	3	Accept	Accept	Accept
Term of Risk	5	1	2	5	1	17	Accept	Accept	Accept
Freedom of Choice	3	2	0	3	2	10	Accept	Accept	Accept
Style and Approach	0	5	0	0	6	0	Reject p<.01	Accept	Accept
Techniques	3	1	0	3	1	0	Accept	Accept	Accept
Consensus	2	0	0	2	0	0	Accept	Accept	Accept
Total Constructs 213	96	87	30	100	100	100			

The levels of significance are shown in Table 6.4 for each pair of Categories in which the null hypothesis was rejected. Thus:

BINS and QD do not attach the same level of importance to “Controllability” (p<0.015) and “Style and Approach” (p<0.01);

QD and VGOLD do not attach the same level of importance to “Actual Control Achieved” (p<0.01); and

BINS and VGOLD do not attach the same level of importance to “Controllability” (p<0.01) and “Actual Cost” (p<0.05).

6.4.2 Test on the location of Construct Categories

In addition a χ^2 (p<.025) test was carried out to establish the following hypotheses on the **combined** data to establish whether there was any association of the overall location of constructs between the 3 companies as shown in Appendix H 6:

Test between BINS and QD to assess whether the overall location of Constructs was different:

Ho: BINS = QD;

H₁: BINS ≠ QD

Test between QD and VGOLD to assess whether the overall location of Constructs was different:

Ho: QD = VGOLD;

H₁: QD ≠ VGOLD

Test between BINS and VGOLD to assess whether the overall location of Constructs was different:

Ho: BINS = VGOLD;

H₁: BINS ≠ VGOLD

The null hypotheses was accepted in all 3 cases (χ^2 , $p > .975$) indicating that essentially all 3 companies overall attach similar weights to their various Categories of Risk when considering risk issues. The results are also shown in Appendix H 6.

6.5 Review of the construct relationship between BINS and QD

From earlier results in Section 5.1, BINS was more risk ready than QD. Table 6.5 shows for BINS and QD, the total number of constructs elicited from the 2 Boards, together with the frequency and percentage of the 183 constructs chosen in total by the 2 companies. Table 6.3 shows that most constructs fell into the Category “Actual Control Achieved” (21% of all constructs elicited) and the least number of constructs fell into the “Consensus” Category (2% of all elicited constructs). When considering risk issues, the Boards of BINS (highly compliant) and QD (less compliant) may therefore tend to focus their attention on whether the risk in question is actually under control, and Boards may be least likely to pay attention to whether there is “Consensus” amongst Board members in considering risk issues.

Table 6.5 Categories and Total Frequencies of BINS and QD Board			
No	Category	Total number of constructs elicited from BINS and QD Boards by Category	Percentage of total number of constructs within each Category
1	Actual Control Achieved	39	21%
2	Actual Control Potential	32	17%
3	Controllability	27	15%
4	Potential Riskiness	20	11%
5	Knowledge	13	7%
6	Actual Cost	11	6%
7	Resources	11	6%
8	Return on cost	8	4%
9	Term of Risk	6	3%
10	Style and Approach	5	3%
11	Freedom of Choice	5	3%
12	Techniques	4	2%
13	Consensus	2	2%
	Total number of constructs	183	100%

6.6 Differences between Boards on the scope of their risk repertoires

A more detailed analysis of Table 6.4 will be broken down into the sub-headings as follows:

Initial observations across all 3 companies

In addition to the observations drawn from the RepGrid interviews as shown in Table 6.3 which highlights the consistent way in which the Boards focused on a defined narrow range of constructs when faced with risk, from Table 6.4 it is also clear that from the data derived from the RepGrid interviews, the Boards of all 3 companies would nevertheless attach different levels of priority with respect to “Controllability”, “Actual Control Achieved”, “Actual Cost” and “Style and Approach”. BINS and

VGOLD were the more compliant of the 3 companies, applying similar weightings to all Categories of risk except “Controllability” and “Actual Cost” (at $p < .01$ and $p \approx .05$ levels of significance respectively). BINS and VGOLD prioritised “Actual Control Achieved”, “Actual Control Potential”, “Controllability” and “Potential Riskiness” whereas QD prioritised “Controllability”. When members considered risk, in general they subconsciously applied a hierarchy of categories of risk issues in order of importance. For example in considering the various elements of risk, BINS and VGOLD prioritised thoughts around whether “Actual Control is Achieved”, followed by “Actual Control Potential” and so on. One of the most important issues is clearly “Is Actual Control Achieved”, and Categories such as “Consensus” at the bottom of Table 6.4 were relatively remote concepts in their minds at the time the Boards were tackling risk issues.

In the highlighted cases in Table 6.3, where the Boards did not agree on the level of priority relating to the choice of Categories, it was the QD Board which prioritised Categories differently from the other 2 Boards.

The 4 major Categories of risk

As stated earlier, generally the 4 Categories which were most important to all three companies appeared to be:

- Actual Control Achieved
- Actual Control Potential
- Controllability
- Potential Riskiness

The above 4 Categories comprised 65%, 64% and 77% of the total number of constructs chosen by BINS, QD and VGOLD respectively.

These results would suggest that when faced with a risky situation, the 3 Boards are likely to prioritise in their minds whether the risk issue presented is actually under control, whether it is possible to control the risk, whether there is a need to control the risk, and what the potential risk is, followed by other Categories. However each Board will vary in the order in which they consider these and the remaining Categories, as can be seen by the number of constructs allocated to each category in Table 6.4.

Actual Control Achieved

VGOLD (40% of all constructs), and secondly BINS (26%) attached the greatest importance to this construct, while QD placed relatively little emphasis (16%) on it.

This construct defines the extent to which the Board is in control over risk in terms of putting in measures to bring the risk to within manageable tolerance levels. This difference may be explained by the higher perceived levels of risk readiness by the respective Boards in their organisations. While VGOLD believed that it had achieved better control at an individual level, in the feedback sessions members admitted that in fact their mental reference point was the degree of control achieved at the operational level, as that was where their focus lay. The VGOLD Board thus appeared to succumb, at an individual level, to heuristic bias- the propensity to focus on issues which come most readily to mind – and should have focused more as a group on risk matters. BINS were most realistic and consistent individually, and during the group feedback sessions in terms of actual control achieved. This was due to the much higher level of regulatory controls and processes in place, and because risk was much more deeply ingrained into the psyche of the Board, explainable by their insurance status. Risk issues were more ‘front of mind’ in Board and senior management meetings, so that there was greater consistency in the views of the individual members and the Board in terms of the level of controls achieved. The lower score of BINS compared to VGOLD was due to the more realistic approach of what risk was being well managed, and what still needed to be done to improve risk measures. QD recognised that there was little risk management in place with a consequently low level of control achieved. This view was shared by all QD Board members, including the CEO, who however felt more confident in his own ability to manage risk.

Actual Control Potential

All 3 Boards (BINS 19%, QD 16%, and VGOLD 10%) were consistent in their views on the relative importance of the “Actual Control Potential” when faced with risk. This is the second choice of Category for both BINS and QD, and the third choice for VGOLD. Thus when confronted with risk, all 3 companies tended to question whether, and the extent to which, such risk could be controlled. It would be expected that high scores on the previous Category would be associated with lower scores on this category, and vice versa. This is evident in the case of all three companies. However it is not clear from this answer whether the members had considered actual control potential and dismissed its importance, or whether they felt that there was little benefit in evaluating potential means of reducing risk. BINS was best placed to understand more fully the extent of further risk management potential, whereas VGOLD, and to a greater extent QD, struggled with understanding and coming to grips with the full extent of risk measures which might be applied.

Controllability vs. Actual Control Achieved

There was an important difference between the respective Boards in terms of their “Controllability” and the “Actual Control Achieved”. BINS and VGOLD were more highly compliant businesses than QD. These Boards felt less “Controllability”, whereas the QD Board which oversaw a less regulated company, indicated that it had need for greater “Controllability” of the business. Overall the individual members and the intact Board saw the need for greater control.

Potential Riskiness

All 3 companies attached similar weights to “Potential Riskiness” in the strategic decision process, though this Category did not appear to be the most important. Intuitively it would seem reasonable to expect Boards to consider the potential riskiness of a given strategic decision, say, as the most important priority, and this did not appear to be the case. BINS management readily foresaw potential riskiness from a number of internal and external sources, though didn’t take sufficiently aggressive steps to deal with it. For example they were highly dependent on a small IT company for their systems support, yet did not have plans to deal with the risk, which could potentially prove devastating to the company. This risk was recognised at an individual and group level. Similarly, VGOLD assessed high potential risk issues particularly political risk, and the many ways this could adversely impact the business. In some ways the Board was able to deal with these effectively, and took great pains to address them (failure to adhere strictly to, and implement, health and safety measures, which in the South African Mining industry is a politically charged issue, has serious consequences in terms of possible closure, heavy fines or industrial action), but adopted a resigned attitude to issues over which they had little control. The issue of political risk aversion on the part of foreign investors led to difficulties in raising fresh capital, which in turn weakened the capacity for growth. QD was able to articulate, at an individual level, the high potential risks to the business, but seemed unable at a Board level to develop coherent strategies to deal with them. Examples were: addressing product failures in production; the effects of competition; repeated mistakes in the R and D program; and repeated mistakes of a strategic nature. Individually issues were clear, and became clouded in uncertainty at a Board level.

Knowledge

QD was most, and VGOLD least, preoccupied with “Knowledge” around risk issues when considering risk strategy. In the feedback session QD referred to lack of knowledge of risk as a prime factor for its poor risk management strategy. Knowledge relating to the nature, severity, incidence and type of risk are fairly low down the order of priority, raising the question whether Boards have sufficient knowledge of the risk itself in trying to deal with it effectively, or whether they make a conscious and systematic effort to gather more information. Thus QD, to its credit, realised at an individual level that it lacked the knowledge to deal effectively with risk. At Board level the CEO felt that the company had experience and knowledge of its risk, but this did not translate into coherent and systematic strategies to deal with risk. VGOLD Board members had extensive practical experience of running a mining company, and most of the senior management had worked together for a decade or more. Knowledge around risk was concentrated in operational issues, with little experience in major non-operational strategic issues such as listing processes. BINS also possessed considerable knowledge around its risk, and had a more rounded view of risk, its ramifications, and how to deal with issues.

Actual Cost of Risk Mitigation

For QD the “Cost of Risk Mitigation” appeared to be important in all decision areas which impacted their risk, and to a lesser extent for BINS and VGOLD. BINS placed a high priority on the “Return on Cost” when considering strategic risk issues, unlike QD and VGOLD who were less pre-occupied with the concept of return on the cost of risk mitigation. These results suggest perhaps that Boards will take steps to deal with the risk without undue concern of the cost or how efficient the risk mitigation steps are at curbing risk. In particular VGOLD identified skills shortages as a major source of risk, yet were reluctant to actively recruit new engineers with the skills to manage operational risk.

Resources

Unlike the other 2 Boards, VGOLD did not place any emphasis on “Resources” when considering risk issues, in spite of the fact that during the interview process the CEO cited lack of skilled resources as a major obstacle to the future growth and stability of their business. QD members recognised the need for high quality staff, yet were reluctant to change, and BINS identified the need to keep “upskilling” its staff which it

regarded as its most important resource. Loss of key personnel was identified as a major risk by BINS.

Term of Risk

Interestingly BINS and VGOLD placed higher emphasis on “Term of Risk” in considering their risk issues, unlike QD which did not focus as much on this issue. Clearly both BINS and VGOLD were faced with long and short term risk challenges, and felt it important to distinguish between short and long term in developing their risk mitigation strategies.

Freedom of Choice

“Freedom of Choice” was not part of VGOLD’s repertoire of considerations in approaching their risk management issues. This may be due to the greater rigidity in VGOLD’s risk management processes, or may be due to the fact that VGOLD viewed a rigid approach to risk as a necessary pre-requisite to running its business efficiently. QD’s Board was more creative in considering different ways of dealing with risk when high and medium risk impact situations loom. BINS considered “Freedom of Choice” when the risk issue was likely to have a lesser impact on the business. This demonstrated an underlying rigidity of attitude to risk management. This may be due to the greater degree of regulatory prescription and lack of latitude insurance companies have in risk management. The tightly knit Board of BINS was able to alternate between significant rigidity in applying risk management procedures, and an entrepreneurial approach to other strategic issues, such as the establishment of a high risk business in Australia, which proved a disaster. The VGOLD Board exhibited similar characteristics to those of BINS in this regard. QD appeared to have considerable freedom of choice in choosing risk management strategies, perhaps to their detriment, as they lacked structure in their formulation.

Techniques

Surprisingly, BINS and QD attached some importance to “Techniques” when thinking of risk, while VGOLD paid no attention to risk mitigation techniques available to them when considering risk.

Consensus

The BINS Board relied on a consensual approach to risk, though the MD was able to force decisions in his favour on certain strategic issues (such as expanding into

Australia based on unfounded commitments of local partners) unlike the QD Board where the issue of “Consensus” around risk management appeared to be very low, perhaps explainable by the fact that risk issues were rarely discussed at Board level. VGOLD decision making was characterised by a robust approach to discussions and decision making. Years of operational experience resulted in a consensual approach to operational risk. In areas of strategic risk the CEO dominated the decision and acted largely in isolation.

The relative importance of these various Categories will be further discussed later.

6.7 Conclusions from the Repertory Grid interviews

From the above data and subject to the issues of reliability and validity discussed earlier, we can possibly draw the following conclusions based on our small sample of three boards.

- There is a surprisingly high degree of similarity in the weighting Boards give to the various Categories of risk, given that the Boards interviewed had different levels of risk maturity, operated in different industries and were faced with different challenges relating to risk, and had different levels of knowledge and experience to deal with risk.
- Apart from the “Controllability” and “Actual Costs”, BINS and VGOLD agree on the relative importance of the various Categories.
- QD differs in respect of 3 Categories where the relative importance of those Categories varies from BINS and VGOLD. Thus the QD Board which is less prepared to deal with its risk in terms of its corporate governance regulations senses it has a greater “Controllability”. This seems consistent with the fact that QD are less prepared to deal with risk than the other 2 companies.
- The Categories “Actual Control Achieved”, “Actual Control Potential”, “Controllability” and “Potential Riskiness” were the 4 most important Categories for all 3 Companies.
- For QD the “Controllability” is the most important Category, whereas “Actual Control” achieved is more important for both VGOLD and BINS.
- VGOLD appears to disassociate itself from thought processes around overall risk to the business more rapidly than BINS and QD, as the importance of Categories diminish. This can be seen by looking at the cumulative percentages of constructs within the Categories as one progresses down Table 6.3.

6.8 Feedback Sessions with the various Boards

There does not appear to be any literature on the approach adopted in this research, with respect to working with intact Boards. The concept of studying intact Boards was summarised briefly in the pilot study (Section 4.4.3) with initial findings in Section 4.4.2. While many grid studies aggregate individual results as done in the above sections 6.1-6.6, Boards tend not to be involved in collaborative feedback of grid-based material.

A series of informal follow up meetings was conducted with members of the various Boards. Not all members were able to attend the follow-up sessions. The purpose of the follow-up sessions was twofold:

- to present individuals with their constructs and elicit a group discussion comparing the different meanings given to the different constructs.
- to understand how different individuals construed their risks differently.

The main challenge of the feedback sessions (which was accompanied by a complete schedule of the raw data together with a report which summarised the findings) was to get members to focus on the details of the different constructs and their meanings. There was however more interest in having a general discussion around their risk issues. Some unanswered questions presented to certain members were subsequently answered by e-mail. Generally Board members were intrigued by:

- the sheer volume of data generated
- the degree of bias they were subject to at a strategic level, though they agreed that it existed
- the nature of the conclusions which were able to be drawn
- the variation and complexity of issues around risk management, particularly QD members
- disagreement amongst themselves (refer to the BINS issues relating the influence of the CEO, and concern around the distance from reality of the CEO)
- appreciation for the work carried out and the insight the process afforded them to understand their risk construing process
- the differences amongst members relating to the degree of focus on risk issues

Due to the time constraints and the desire of Boards to have more of a general discussion around risk it was not possible to delve systematically or exhaustively into how individual members construed each of their risks differently. The main points of the feedback sessions are summarised in Table 6.6 below.

Table 6.6 Summary of the feedback sessions with the Boards

Main Issues	BINS	QD	VGOLD
Main Overall Response from Board	Do we have adequate systems, processes and controls to minimize risk?	We are wholly unprepared to deal with risk!	We do not spend enough time on clinically assessing specific areas of our risk, though in some areas (operational) our response is good
People issues	Do we have the right people in place?	We do not have the right people in place to understand/ manage/control risk	People discipline around risk issues leads to risk containment. Technical Management drives operational risk control. More good people needed. Having good people leads to a reduction in risk
Boards' perceived major risk issues facing firm	Systems failures and underwriting losses. CEO stated that continuity risk is major challenge	Financial, market and technical (product and design) failure risk	Operational and political risk. Too much of an ad hoc approach to risk, not systematic enough
Major Risks from RepGrid analysis	Regulatory, Systems, Strategic, Market	Supply Side, Systems, Market, Financial	Political, Supply Side, Resources, Financial
Researcher perceived major risk issues facing firm	Over concentration of power in CEO, and inability of other Board members to stand up to CEO, leading to strategic risk. Lack of business strategic input from NED's. Over-concentration of risk in hands of a single IT development/support engineer. Market risk from competitors	Financial risk and lack of entrepreneurial skill and vision by Board. Board remoteness from reality. Over concentration of power in CEO due to weak managers	Operational and political risk; lack of focus on over concentration of risk in one product; a long history of below market performance and poor strategic decision making; high concentration of power in the CEO. Mining rights may not be renewed, thus high degree of political risk.
Examples of where strategic risk and constructs conflicted	Australian expansion proved disastrous based on inaccurate claims data provided by their insurance partner. Strategic risk cited as third most important element of risk. In spite of past experience, Board has not changed its strategic stance	Board recognizes the past poor strategic decisions around product developments having squandered R and D budgets over successive years on poorly considered and poorly executed developments, leading to financial risk. Company sold off loss making divisions. Very little discussion in RepGrid interviews around poor strategic management, and not cited as a major source of risk.	Board takes a different view to political risk which requires careful strategic input. There have been significant past errors based on poor strategic analysis such as the incorrect listing of the company on the NASDAQ, and then having to move the listing to Australia. There were significant costs in setting up the Zimbabwe operation which had to be closed. All members were neutral regards "Political Risk" in spite of these past problems and in spite of the highly politicized nature of the mining industry in South Africa, and particularly in view of the fact that new order mining rights have still not been granted to them by the Government
Overall Board's stated risk frame of mind	Overall is risk seeking/tolerant; and more optimistic than pessimistic	Board is in a risk averse state of mind	Board is in a risk averse state of mind

Boards response to interviewer assertions	We must be practical when approaching risk, particularly on product development. Retraction by senior members that CEO was the central focus of risk. Major efforts to try and keep up with regulatory requirements which are evolving quickly	State of denial, mainly from CEO, that vision and entrepreneurial skill is a problem	Past problems do not affect the future; focus on the current problems. Too few resources to manage ERM differently.
Gap between RepGrid and feedback	Denial of reality of poor strategic planning, and conflict over issues of CEO dominance	In feedback Board focused on actual problems, whereas in RepGrid interview there was more focus on theoretical/potential issues	While the Board is highly capable of strategizing around risk issues, and is highly capable of grasping the risk issues, many decisions are taken on the spur of the moment, particularly in operational issues which the CEO cites as the highest source of risk. Thus there is a gap between awareness of risks, and the reality of day to day treatment of these risks in the face of driving production volumes.
Main Response to Interview process	We focus well on some risks (financial,regulatory), and poorly on others (operational, product and client management)	Made us realize we don't understand risk	This confirmed our suspicions that we focus well on some risk issues, but not others (evidence of source dependence)
Overall interviewer assessment of ERM process	High overall risk control capabilities. Have made strategic errors	Satisfactory operational and procedural controls. Poor at assessing strategic and market risk	High degree of operational risk controls; Board poor at foreseeing high impact, low probability events based on history of strategic errors
Attitude to cost of ERM	Aware, and funds/resources available	Not aware, no funds /resources available	Aware, funds and resources available, but not main priority
Attitude to return on cost of ERM	No process in place to consider/measure risk return on cost of risk management	No process in place to consider/measure return on cost of risk systems	No process in place to consider or measure return on costs of risk systems. High return on people costs.
Main contradictions between Boards' constructs and feedback session	Remoteness from reality cited by most Board members, and negated in the feedback session, mainly due to presence of CEO. Constructs showed operational aspects well under control, but some doubt of this in the feedback. Serious mistakes have been made in terms of strategic risk assessment, at significant cost to company by being over trusting and under analytical in assessing opportunities	High level of contradiction between levels of perceived strategic risk management capability by individuals and their assessment by non-executive directors	Contradiction between the company's reliance to manage operational risk by having good people, and their unwillingness on grounds of cost to implement a plan to deal with the issue. Discrepancy between size of threats and degree of focus. Further contradiction in the "Term of Risk". Directors state that mining requires a long term vision, but attached little importance to the term of risk.
Main contradictions between Board members'	Lack of understanding of relative levels of strategic risk between CEO and others due to lack of	NED's* state that "Remoteness of the Board" is an important contributory factor to	Board members disagree on the relative levels of "Overall Risk to the Business". Members stated that they will have different assessments of

individual interpretation of constructs	<p>information (concentrated in hands of CEO) and lack of experience in strategic management issues.</p> <p>The CEO is the driver of business development and engages in high risk options, yet in the risk aversion questionnaire he consistently stated his aversion to risk</p>	<p>company risk. The CEO interprets this as meaning the extent to which the company is in touch with all current facts and issues which are relevant to the business. The CEO therefore is concerned with “knowns” whereas the NED’s* are concerned more about the “known unknowns” as well as the “unknown unknowns”.</p>	<p>their views on risk and the elicited constructs because of different levels of interpretation, knowledge and understanding of the elements of risk.</p>
*NED’s = Non-Executive Directors of the QD Board			

6.9 Summary of the feedback results

The results in Table 6.7 highlight many of the problems Boards experience in making sense of their risk. Risk arises in many forms and guises; there is some experience and knowledge of past risk issues; some risks arise unexpectedly, other risks are more foreseeable; cognitive bias and interaction amongst Board members results in greater focus in some areas and less in others (source dependence); people wish to focus on the areas with which they feel more comfortable.

The summary in the above table highlights certain aspects of risk sensemaking amongst the Boards interviewed. A few further comments are relevant:

- In the feedback sessions, the emphasis on certain risk issues had changed since the time of the first interview. The group feedback produced a different slant on many issues. In BINS’s case for example, the CEO dismissed suggestions of over concentration of control / risk in his hands while during the RepGrid interviews this point was raised by at least 2 other senior directors. In the feedback, BINS CEO’s assessment of the major risk facing BINS was one of continuity, yet in the RepGrid interview Political, Regulatory, Resources, Systems Risk were all given equal prominent weightings; the word ‘continuity’ did not appear once in his repertoire of constructs.
- VGOLD directors spoke of long term vision and long term planning in the RepGrid interviews, but did not raise this point in the feedback sessions.
- The members of the VGOLD Board are driven by different objectives. The CEO is highly driven by production targets and profits. Production is an area of major risk to the company (accidents, major equipment failure, loss of key personnel, labour issues). Risk management in this area is ‘day to day’ business, and is not

formally dealt with on a structured risk assessment basis. ‘From experience’ and a ‘hands on approach’ are terms used to describe much of the way risk is managed. The CEO and senior staff have experience of what is likely to work, and what is likely to cause disruptions.

- QD’s Board was unprepared to deal with risk. The non-executive directors believed that the CEO was unprepared to deal with risk, while the CEO believed that he had a clear understanding of risk matters. Experience has shown that the CEO has made fundamental strategic mistakes. It would seem that VGOLD and QD management adopted the same hands-on approach but there was a greater awareness of risk issues per se in VGOLD than QD.
- BINS’s Board dwelt on the issues of predictability of risk at some length, in line with the emphasis on “Potential Riskiness” in the Construct Categories. One of the senior Board members averred “Our business faces a spectrum of risks from predictable (sic) insurance product losses -for which premiums and probabilities can be calculated – to largely unpredictable events such as changes in economic, political or legislative issues. Some risks can be controlled.” The FD stated “Risks are in nature not predictable. I want as many controls as possible”. There is thus a fundamental difference in the way the 2 members of the Board construed the Construct Category Potential Riskiness.

6.10 Further commentary on the feedback sessions and comparison of results from the initial interviews

Boards are subject to considerable institutional pressure, and lag ERM implementation as envisaged by regulators. They struggle to make sense of their endogenous and exogenous risk elements. In the three cases studied in this thesis, Boards complied to varying degrees with their ERM obligations, they all suffered from collective cognitive biases in assessing risk, and appeared to present similar constructs in terms of construing their risk issues. However the emphasis Boards placed on certain constructs changed over time, as Kelly (1955/1991) predicted in terms of his personal construct theory. It is evident from the 3 cases studied in this thesis, that between the initial interviews and the feedback sessions Boards changed the way they viewed risk issues over time (organisation corollary); contradicted themselves over time (fragmentation corollary); varied their views as they successively constructed and reconstructed their risk environment; Board members differed from each other in terms of their construction of events, (individuality corollary); and Board members played a role in the construction of other Board members’ views of risk (sociality corollary). Overall it is possible to conclude that Board processes rely on the creation of internal

representations of the elements of risk they encounter, in order actively to predict future events in line with the fundamental postulate asserted by Kelly (1955/1991) in his personal construct theory. In many observable ways Boards behave with human like qualities in managing their risk. In Weick's (1995) terms a Board is therefore likely to makes sense of its risk, and behave as a cognitive entity.

6.11 How the Repgrid results and feedback loop add to the general body of knowledge as to how Boards understand their risk

In this section the latest reviews and recommendations for further research on corporate governance, ERM, institutional logic and strategic issues around risk will be considered in the light of the results of the feedback session. The purpose of this section is to demonstrate that many of the current research questions in this field have been touched on in this research.

Table 6.7 RepGrid Results and feedback loop compared to the major contemporary research questions		
ERM		
Power, 2009, p. 854 Regulators and Companies focus primarily on capital as opposed to risk appetite and asserts that the reasons for the credit crisis are that regulators were more concerned about process than encouraging companies to develop an overview of the risk environment.		
BINS	QD	VGOLD
BINS was highly focussed on risk process, and less on the risks around appetite, confirmed by the ventures into Australia. Bins Board more focussed as individuals on high level strategic issues, than as a Board which tends to focus more on institutional issues.	QD had no formal risk management process in place, was not compliant in terms of King III, and focused on neither risk appetite nor process to manage risk. There was slight evidence of operational risk management in terms of quality control and minimising product breakdown and returns. Risk issues were not articulated at Board level.	VGOLD more focussed on operational risk, and similarly blind to risk appetite. Issues around risk relate mainly to operational issues, and little in way of formal risk analysis
Beasley et al., 2005 , p. 530 Board and senior management leadership on ERM is critical to extensive ERM deployment		
BINS	QD	VGOLD
Bins has strong leadership risk operational issues. Board is	QD leadership does not demonstrate strong leadership	VGOLD leadership very strong in operational risk management,

focussed on operational risk issues, is aware of other elements of risk, but strategic risk lies firmly under control of the CEO.	or knowledge regarding ERM. Members of Board unanimous that leadership on risk was a problem. In feedback session no open criticism of leadership.	which is effective. There is unanimity of thought on operational risk issues. Controllability of risk could be enhanced by greater human resource concentration on operational risk. No formal strategic risk management process in place.
<p>Hagigi , Sivkumar, 2009, p.293.</p> <p>The CEO should realise that effective risk management is not just a reduction or elimination of risk and should consider the various elements of risk, both exogenous and endogenous</p>		
BINS	QD	VGOLD
BINS – The CEO seems to be fully aware that risk management is not just about reduction or elimination of risk. This understanding is equally shared between the members of the Board, but to a lesser extent, due to cognitive limitations amongst Board members relating to their risk. CEO believes that his experience and knowledge sufficient to determine extent and appetite for risk issues, though there is no formal analysis of risk on strategic matters.	QD CEO has a poor holistic view of risk, or of risk management. This is mirrored in the approach of the Board to risk matters. There is no formal delineation of risk across internal and external issues.	VGOLD CEO has a realistic view of operational risk, and does have an attitude to overall risk which is more focused on reduction or elimination of risk. On other risk issues - the several errors made in the listing process – demonstrate that the CEO is not able to deal with all risk issues.
<p>Hagigi , Sivkumar, 2009, p.294.</p> <p>Future research should attempt to integrate the effects of multiple elements of risk while examining exogenous elements of risk like country risk, political risk and studying them as a system of risk rather than as independent elements of risk</p>		
BINS	QD	VGOLD
BINS were able to integrate and synthesise the elements of risk into an overall impact assessment, particularly as regards operational risk.	QD – most Board members did not demonstrate any detailed knowledge of individual elements of risk.	In this research empirical data was used to assess the overall impact of multiple elements of risk. The Board of VGOLD clearly understood the impact of multiple risks relating to the

		<p>external environment such as political risk, and the possible impact on the overall risk to the business.</p> <p>VGOLD was able to integrate and synthesise the elements of risk into an overall impact assessment. The emphasis by different members of the Board was different as shown by their differences in “Overall a greater source of risk to the company” compared to others.</p>
<p>Greenwood et al., 2011</p> <p>’Institutional logics- Institutional pressure give rise to inflexibility and hindered competitiveness.,</p>		
BINS	QD	VGOLD
<p>BINS – subject to considerable institutional pressure due to changes in the regulatory requirements affecting general insurance companies relating particularly to reporting and solvency. These changes required an extensive commitment in terms of management time and additional resources. These additional pressures did not translate into inflexibility and lack of competitiveness, but more seen as an opportunity.</p>	<p>QD – this acts as a drain on already limited resources</p>	<p>VGOLD – poor response by regulators hinders development and raises risk return considerations governing future investment. Additional pressure regarding health and safety regulation seriously affected competitiveness due to high costs of implementation, increasing the gold price break-even point. These points were well articulated in the personal constructs, and the feedback session.</p>
<p>CEO and Board relationship</p>		
<p>Boyd et al., 2011, p.1917</p> <p>Research is needed into the relationship between insider directors and non-director members of the top management team, that between the CEO and outsider directors, and the issues surrounding the external directorships.</p>		

BINS	QD	VGOLD
<p>Non-executive directors and senior managers felt isolated from board making decisions and felt that they were unable to comment on certain aspects of the company's strategic direction and risk. This is evident from the absence of answers in certain of the questionnaires. "Knowledge" and "cognitive exclusion" resulted in a less efficient decision making process on all matters including risk issues. CEO dealt with Board on certain strategic issues on a "need to know basis". Board intimidated by CEO and not assertive in this area. Non-executive members were retained more from a compliance point of view than regarded as providing constructive input into the decision making process.</p>	<p>A gap between strategic and operational approach to management exists between the CEO and non-executive directors. There is unwillingness on the part of the non-executive directors to rock the boat and deal forcefully and directly with myriad issues facing the company. This is due to the "absence" factor –the existing non-executives are often too busy and too distant to become too directly involved, and rely on "providence" in the hope that the business will be properly run. It is also difficult to fully understand the detailed issues involved, resulting in a "distance" factor. Non-executives tend to focus on the headline results, and are not fully able to absorb the important details of strategic and operational issues, so that decision making is often inefficient. Often there is a frustration amongst QD non-executive directors that they would do things 'their way', but go along with the CEO/Board decision making structure. In the case of the financial non-executive director this does not apply. He is much more involved in the financial process, and does not need to understand the operations to follow the numbers. Thus from QD perspective FD financial</p>	<p>The one non-executive director interviewed stressed in his individual interview that his primary concern around strategic risk was the political factor. This he agreed was a situation largely beyond the control of the Board and the company. His concerns related primarily to a) undervaluation of South African Gold Mining assets by foreign investors who had a more pessimistic view of the South African political environment. b) The adherence to corporate governance and regulation in its entirety. The executive directors were more focussed on operational issues and their attitude to regulatory issues varied (source based risk and dependence) and adopted the overall attitude that partial and financially manageable compliance would suffice. Overall compliance was deemed overly onerous in managerial terms.</p>

	control is much better than non-financial control and input by the NED's.	
Organizational Behaviour		
<p>Arnold et al., 2011, p.187</p> <p>Organisations are complex entities and substantial research is required to uncover the myriad of complex interrelationships that drive organisational behaviour and performance</p>		
BINS	QD	VGOLD
Organisational behaviour is premised on a strong intellectually competent CEO who takes the lead and overrides resistance. However there is generally a collective awareness and competency around non-operational regulatory issues	Organisational behaviour is premised on a strong intellectually competent CEO who takes the lead and overrides resistance. However there is a collective unawareness and incompetency around non-operational regulatory issues. Second tier cognitive factions exist within the Board, that interact and discuss strategic issues at mainly an operational level, and generally adopt the views of the CEO on major strategic issues. Efforts by the second tier to assert their views on strategic matters are invariably thwarted. In QD the board fulfils a mostly operational role.	The organisational dynamic which characterises VGOLD is more in the form of a strategic collective with fully recognised competencies and intellectual respect between members of the Board. The Board members were equally matched in terms of competency and mental assertiveness and participated in multifaceted and robust discussions. This results in more efficient discourse and more effective solutions in dealing with risk.
<p>Van Ees et al, 2009, p.316</p> <p>Further research on behavioural perspectives of Boards and corporate governance should focus on decision making processes rather than structures and outcomes.</p>		
BINS	QD	VGOLD
The entire attitude of the Board is	In the case of QD there is	Operational decisions are made

<p>focussed on shared beliefs in the future strategy of the company. Past experiences are clearly articulated in terms of past errors and how to overcome these. Past experience serves as a useful guide to avoiding future operational mistakes. At a strategic level the CEO is dominant and high level strategic decisions are cognitively ring-fenced so that other members of the Board's views are effectively neutralised. Personal constructs are more clearly articulated outside the Boardroom than inside.</p>	<p>considerable reliance on past behaviour which although shown to be flawed is entrenched in the current decision making behaviour. Thus in spite of previous adverse experience, certain mistakes continue to occur such as: over budgeting sales, under budgeting on expenses, miscalculating the reality of strategic decisions. (Bias).</p>	<p>on the spur of the moment due to intense production deadlines and output volume targets. Managers are highly skilled and knowledgeable of the mining environment. Decisions around non-operational issues where lack of similar skills and operational insight are awkward, pedantic and poorly structured. Decisions in these cases are unstructured, based on urban legend and ineffective advice. Prime examples are past decisions taken by the Board (consisting mainly of mining engineers) on issues relating to listing jurisdiction, market capitalisation and financial structuring without strong financial director input. Financial strategy is led by the CEO.</p>
<p>Greenwood et al., 2011, p. 357</p> <p>While the extant literature has highlighted how shifts in logics ... affect organisations across a field, much less systematic attention has been paid to how individual organisations experience and respond to the complexity that arises.</p>		
BINS	QD	VGOLD
<p>BINS has experienced a considerable shift in institutional logic as a result of new legislation affecting corporate Boards. This trend was reflected in South Africa in the Insurance Laws Amendment Act (ILAA), the FAIS General Code of Conduct, SAM/Solvency II, the Consumer Protection Act and various conflict of interest issues. The response was characterised by a comprehensive and integrated overall reaction and re-</p>	<p>Since the introduction of King III in 2009, QD has not responded to the corporate governance or ERM exigencies. The legislative requirements are completely "off the radar". One issue which may explain the significant differences in response to the regulatory exigencies between QD and BINS may be the differences in threat of sanction presented by non-compliance. Failure on the part of BINS would result in an</p>	<p>VGOLD is subject to Australian Stock Exchange listing requirements and Australian mining law, in particular "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". In addition to other Australian company law relating to corporate governance, and company law, VGOLD is also subject to South African company law, King III requirements on corporate</p>

<p>formulation of risk management processes. There was considerable evidence of diffusion of thought and process throughout the organisation. This was evident in the detailed constructs relating to compliance which arose during the course of the interviews, and in the feedback session. While the new institutional pressure imposed on the firm resulted in additional costs, operational complexity, the legislation was palpable, which enabled the company to respond with a clear plan and cohesive purpose.</p>	<p>immediate withdrawal of their insurance licence, while compliance with King III does not carry the same force of law. The pressure of operational and other field based challenges served as a pre-occupation by the CEO and other operationally focused members of the Board. A form of disjointedness was evident in the way the QD Board dealt with issues.</p>	<p>governance, and most importantly the current South African mining legislation promulgated under the Mineral and Petroleum Resources Development Act (2004). VGOLD thus can be considered to suffer under multiple institutional logics, a highly complex set of regulatory requirements spanning to different countries' regulatory regimes. Many of the regulatory issues facing VGOLD lie outside its control, in particular the legislation regarding mining rights. VGOLD's response to this regulation has been characterised by the appointment of specialists and senior Board members who have experience of these various issues, and who are able to bring their knowledge and skill to bear in guiding the business through the various regulatory hoops. Unlike BINS where the CEO was dominant and provided the leadership around regulatory issues, in the case of VGOLD the CEO was instrumental in identifying senior leaders in the gold mining industry to provide the necessary Board level knowledge and skill to develop responses to the "multilevel institutional logics".</p>
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6.12 Further discussion on the feedback sessions and literature synthesis

This section will deal further with the results of the feedback sessions. This research has shown that Board members think differently, and their views coalesce into group collaborative constructs. Board members have individual views about company risk as described in their personal constructs. These constructs have arisen from the result of

knowledge and experiential learning, which, as Kelly (1955/1991) states is a continually evolving internal representation of their risk environment. Thus knowledge acquisition is dynamic (Pandza, Thorpe, 2009, p. S128). Board members at the same time suffer from cognitive limitations in making sense of the risk environment, and are in a continual state of flux regarding the assimilation of new knowledge.

It is to be expected then that individual Board members will therefore in the collaboration process change their individual constructs as they gather fresh information during the Board process:

- QD continually made persistent errors in their research and development program, believing that they would be on time and within budget, which they have never achieved. The Boards reframes every new project situation, and throughout the project encounters similar situations as before. The Board underweights the very high probability of cost / time overruns. New issues are continually reframed in the light of this over-optimism.
- BINS is subject to strict regulatory requirements, which require a continual re-assessment of its risk profile. It embarked on a venture in Australia, underestimating the high risks of entering into a new territory, in spite of ample evidence that this was to be the case. Confirmation bias led the Board to believe that their relationships with their South African insurance partners would be as functional in Australia as in South Africa. They were supplied incorrect claims data, on which they based their premiums. In the reframing process, there was conviction amongst the South African Board that past troubles were behind them, and they kept drifting from reality, with the result that the business required substantial re-capitalisation.
- VGOLD had similar issues. They listed on the NASDAQ believing that this would be a good home for a junior South African gold miner. Most other similar companies were listing in Canada, where there was a greater risk appetite for emerging market extractive industry listings. The lack of USA investor interest forced the Board to reframe and reconsider its position. The company was de-listed in the USA, and the company sought a new listing in Australia. Again the reframing process overlooked the reality of fresh, yet different, challenges in Australia, where the company was similarly unsupported, finding it difficult to raise capital because of the political uncertainty around South African mining companies against the background of political threats of nationalisation. The continual risk bias in the reframing process resulted in the VGOLD Board

continually drifting away from political reality. As further evidence of this intrinsic flaw the present author refers to as ‘reality drift’, (the harmatia referred to in the opening paragraph of this thesis) VGOLD experienced similar political issues in its Zimbabwean operations, resulting in the closure of its mine there.

If the Common / Variable Hypothesis outlined in Chapter 7 applies, a company that is not ready to deal with risk, may exhibit poor behavioural characteristics. It would seem that the implementation of risk management itself results in a change in behaviour towards risk issues. Put more profoundly, the introduction of risk management measures not only fortifies the company itself from risk, but engenders a change in risk behaviour amongst Boards which provides additional “group sensemaking” protection in terms of their decision making processes.

6.13 Specific South African political issues

The issue of political risk was dealt with in the RepGrid interviews, and was defined in Table 4.7 as:

<i>Understanding political risk</i>	<i>An issue which clouds the South African economic landscape and encapsulates issues such as political instability, political interference, business unfriendly legislation, social unrest and labour militancy. Black economic empowerment falls under this broad grouping and satisfies the hierarchical criterion</i>
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In many ways the South African corporate governance landscape differs from those of other emerging and developed countries. Aspects of South African legislation in terms of corporate governance requirements exceed those of many other countries. King III lays down specific guidelines relating to how companies are required to manage their risk, for example by requiring companies to produce a risk matrix setting out causes and probabilities of incidence of risks believed to face the company. Companies are also required to produce specific reports on issues such as IT risk. Sarbanes-Oxley for example does not specify risk management in this kind of detail. King III is also a more flexible form of corporate governance regime requiring firms to “comply or explain” whereas Sarbanes-Oxley requires firms to “comply or else”.

One other feature which merits discussion in South Africa is the impact of Broad-based Black Economic Empowerment (B-BEE) on risk issues, and risk perceptions.

B-BEE is a means of redressing the imbalances of the past by requiring companies to engage in a range of measures to broaden the participation of previously disenfranchised (under Apartheid) and excluded Black, Indian and Coloured people from access to the economy (Andrews, 2012).

A recent survey by the South African Department of Trade and Industry (DTI, 2012) defines B-BEE as:

“The B-BBEE process includes elements of human resource development, employment equity, enterprise development, preferential procurement, as well as investment, ownership, and control of enterprises and economic assets” (p.5).

The DTI (2012) also itself recognises the high cost of B-BEE:

“Costs [to enterprises] are also relatively high especially over the short to medium term. Costs of achieving policy objectives including financing and investment costs (new enterprises and ownership transfers) will continue to strain financial resources of banks, private sector, and government. Implementation costs include training procurement staff, amending procurement procedures, amending contracts where necessary, and changes to reporting systems. There is a risk of reduced investment [in firms’ capacity] if firms consider the amendments stringent and resource sapping” (p.16).

It is possible to conclude that there is a high likelihood that B-BBEE adds to the risk of business underperformance in South Africa as a result of the diversion of otherwise productive assets to achieve political ends.

The political and economic aspects of corporate governance reform in South Africa appear to be little understood, and their effects in terms of cost to the economy largely unclear, and the impact on global competitiveness of corporate South Africa largely unresearched (Diamond and Price, 2012, p. 57).

Other aspects which require brief mention are the high levels of corruption and crime which are a net cost to the economy and result in uncompetitiveness, and inefficiencies. During the course of the RepGrid interviews, crime and corruption were not singled out as specific sources of risk.

6.14 Triangulation of results of this thesis and other published work

In Table 5.9 methodological triangulation was considered to assess the validity of Boards’ risk aversion behaviour. This brief section compares the results of this thesis with other work done in this field as shown in Table 6.8 below.

Table 6.8 Comparison of results from this thesis with other published work		
Topic	Findings of this thesis	Other published work
Risk Readiness	This research finds that Boards are not ready to deal with risk	FSA (2010); Beasley et al., (2010,2011,2012); Deloitte (2012); Boards are not ready to deal with risk.
Risk Aversion	Boards are neutral/ risk averse when facing gains, and risk tolerant when facing losses	Yue-Fang Wen (2010); when corporate governance is introduced risk aversion facing gains is reduced, and risk tolerance is increased when facing losses
Risk Bias	Boards underweight high and low probabilities facing gains. The evidence is less conclusive when facing losses. Boards are slightly risk averse facing gains, and very slightly risk tolerant facing losses, the degree of which is directly related to the level of risk readiness	Kahneman and Tversky, 1992; Prospect Theory shows individuals underweight high probabilities and underweight low probabilities for gains as well as losses. Lant (1992 p.641) found systematic bias towards optimism amongst Boards. Figenbaum and Thomas (1988) indicated there is substantial evidence that faced with uncertainty Boards behave in line with the biases predicted under Prospect Theory, viz., risk aversion when facing gains, risk tolerance when facing losses, loss aversion and over/underweighting low/high probability events. Schwenk (1984 p.112) describes the cognitive simplification process Boards undertake in deriving strategic decisions when faced with uncertainty. The decision making process is characterised by “lack of structure ... and by novelty, complexity and openendedness”.
Board members think differently	Members of Boards think differently about risk issues	Daft and Weick 1984; Tegarden et al., 2009; Boards think differently and there are cognitive factions. Allison (1971) finds that Boards are likely to behave like their individual members. Wallach et al. (1962) groups take riskier decisions than the average of their counterparts
How Boards construe elements of their risk	Boards appear to give prominence to certain Characteristics of risk such as Actual Control Achieved, Controllability, Control Potential and Potential Riskiness in making sense of their risk.	Schwenk (1984 p.112) describes the cognitive simplification process Boards undertake in deriving strategic decisions when faced with uncertainty. The decision making process is characterised by “lack of structure ... and by novelty, complexity and openendedness”.
Behavioural form of moral hazard	Compliance with corporate governance requirements engenders a false sense of protection from risk	Much literature on moral hazard and how to avoid. No literature on the moral hazard at a group level, and moral hazard of Boards. Engau and Hoffman (2011, p.1) the higher the level of regulatory uncertainty, the greater the firms response.
Reality Drift	Due to cognitive bias and incorrect data Boards may systematically drift away from reality as they continually reframe their	Sections 6.6 and 9.1 of this thesis support this view from the results of the intact Boards interview. Klein et al.,(2006) continual preservation of existing concepts, the elaboration and discoveries of new data, and the reframing learning process. The arrival of fresh data

	views of risk	results in a reframing process influenced by a form of cognitive bias referred to as confirmation bias, in which respondents seek support to a view, rather than seeking evidence which might disprove their view. Schwenk (1984) when faced with highly complex issues, Boards may resort to altering their perception of reality, leading to Boards dealing with perceived problems and not actual ones. Power (2009, p.854) states that ERM has served an advisory world well by establishing a conceptual foothold for accounting knowledge in strategising discourses. Yet within the ERM frameworks the objectives of a business which are 'at risk' are more or less an exogenous input into the model with the consequence that it is hard to enlist such a framework in challenging the objectives themselves, and ERM is unlikely avoid risk such as ambiguity, drift or transformation in their core objectives.
Unique/Variable Hypothesis	Boards appear to exhibit consistent behaviour regarding certain elements of their risk, and a different set of behavioural Characteristics of risk, the degree of difference in emphasis being directly related to the extent of risk readiness	Little literature found. Daft and Weick (1984) different Boards will react differently to different external environments. Lyles and Schwenk (1992) knowledge within a company consists of core knowledge which is constant and reflects the key elements of the company's ethos and strategy, and peripheral knowledge which is more variable and responds to changes in the internal and external environment.

6.15 Conclusion

Chapter 6 sets out the various results of the data collection process. Three questionnaires were completed by the members of 3 Boards and RepGrid interviews were conducted. The results for each questionnaire and the RepGrid results were individually analysed in detail.

In Chapter 7 the Aims and Objectives will be presented and discussed, and an important new theory will be proposed.

Chapter 7. Research Objectives and Further Theory Development

In Chapters 5 and 6 the results of the following 4 sources of data were presented and discussed in detail:

- Risk Readiness
- Risk Aversion
- Risk Bias
- Repertory Grid Construct Analysis

It is now necessary to return to the main research question and the aims and objectives of the research.

As part of this discussion, the possible existence of any possible relationships between aspects of response and behaviour towards risk which can be drawn between these 3 groups will be considered, bearing in mind that data were collected from only 3 groups (BINS, QD and VGOLD). All results shown are strictly intended to be indicative, and to stimulate further research.

7.1 Relationships between Risk Readiness and other behavioural Characteristics

For convenience, the results of the Risk Readiness Questionnaire which will be referred to in this Chapter are summarised from Table 5.2, as shown below in Table 7.1.

Table 7.1 Summarised Results of the Risk Readiness Questionnaire (from Table 5.2)						
	BINS		QD		VGOLD	
	\bar{u}	s	\bar{u}	S	\bar{u}	s
Increase in Risk Intensity over past 5 years	7.9	2.1	7.9	2.4	7.2	2.5
State of Risk Readiness relative to King III and in terms of overall risk process in place	7.6	1.9	3.9	2.4	6.5	1.3
How Well the Company Manages its Risk	7.5	2.1	4.0	2.3	5.7	2.1
Board Tolerance to Source Dependence	6.9	2.5	5.9	2.5	4.9	1.9
Influence of Budgetary Performance on Board attitude to risk – achieves budget	5.3	2.6	5.9	2.3	6.7	2.2
Influence of Budgetary Performance on Board attitude to risk – underperforms budget	6.0	2.6	5.7	2.3	7.2	2.2
\bar{u} and s are the sample mean and standard deviation respectively.						

7.2 Main Research Aims and Objectives

The main research results will now be presented and reviewed. At this stage, for convenience, the aims and objectives of the research are re-stated.

The research question

Why do South African Boards, in spite of strict corporate governance regulations governing the management of risk, exhibit varying degrees of effectiveness in developing strategies to deal with their enterprise risk management (ERM)?

The aim of the research is:

To examine why Boards, in spite of strict corporate governance guidelines, deal with the myriad risk issues facing the company, to different effect, in developing strategies to deal with enterprise risk management (ERM).

The 4 objectives of the research are set out below together with the research results.

7.3 The objectives of the research

The 4 objectives are discussed in turn:

O1: To investigate to what extent Board members of companies which apply corporate governance regulations are liable to human bias in risk estimation.

The sources of information for this objective are Table 5.2 and 5.7 and Figures 5.3, 5.4 and 5.5. The information in Table 5.7 shows that all Boards underweighted high and low probabilities facing gains and losses except for BINS which over-weighted low probabilities when facing gains. In terms of the overall level of underweighting it is possible to say that QD was the most extreme in underweighting probabilities, followed by VGOLD, and then by BINS, as can be seen in Figures 5.3 and 5.4.

In Figure 5.5 a similar pattern emerges. QD is most risk sensitive to gains, and most tolerant to losses, and less so for VGOLD and BINS respectively. This can be seen by the distance of the respective curves from the Line of Zero Sensitivity.

The degree of application of corporate governance principles is taken from Table 5.2 “How well the company manages its risk”. The results are shown in Table 7.2 below.

Table 7.2 Relationship between corporate governance and risk bias				
Characteristic	Source Table or Figure	BINS	QD	VGOLD
Application of corporate governance principles – how well the company manages its risk	Table 5.2	High	Low	Medium
Underweighting of risk probabilities	Figures 5.3;5.4	Low	High	Medium
Risk aversion to gains	Figure 5.6	Low	High	Medium
Risk tolerance to losses	Figure 5.6	Low	High	Medium

From Table 7.2 it is clear that there is a direct inverse relationship with corporate governance and the degree of risk bias. The direction of the causal relationship is not known (i.e. it is not possible to determine which is the independent variable) and there is insufficient data to quantify or test the strength of the relationship.

The following objective will now be discussed.

O2: To investigate to what extent Boards which are less subject to individual human biases are more effective in developing strategies to deal with ERM.

The testing of this objective O2 is similar to O1, and it is possible to use the information from Table 7.3. However, the measure of ERM implementation is taken from Table 5.2 “State of Risk Readiness relative to King III and in terms of overall risk process in place” showing average scores of 7.3 (high), 2.9 (low) and 6.3 (medium) for BINS, QD and VGOLD respectively. Table 7.3 summarises these results.

Table 7.3 Relationship between risk bias and ERM				
Characteristic	Source Table or Figure	BINS	QD	VGOLD
State of Risk Readiness relative to King III and in terms of overall risk process in place	Table 5.2	High	Low	Medium
Underweighting of risk probabilities	Figures 5.3;5.4	Low	High	Medium
Risk aversion to gains	Figure 5.6	Low	High	Medium
Risk tolerance to losses	Figure 5.6	Low	High	Medium

From Table 7.3 it is evident that there is a direct inverse relationship between the degree of risk bias and the level of ERM. The direction of the causal relationship is not known (i.e. it is not possible to identify which is the independent variable) and there is insufficient data to quantify or test the strength of the relationship.

O3: To investigate to what extent Boards that adhere to corporate governance are more effective in developing strategies to deal with ERM.

This result is quantifiable. From Table 7.4 (Row 2) there is a high degree of correlation ($\rho=.97$) between the State of Risk Readiness and the degree of corporate governance with respect to risk management. The reliability of the correlation coefficient was tested, as shown in Table 7.4. It is possible therefore to reject the null hypothesis. Therefore:

H₁: Boards that adhere to corporate governance are more effective at dealing with strategies to deal with ERM.

O4: To examine the ways in which the estimation and personal construing of risk differs between highly compliant and less compliant Boards.

From Table 6.6 BINS and VGOLD are more highly compliant, and QD is less so. BINS and VGOLD feel confident that they have less need for compliance, while QD feels that it has a greater Controllability of its risk. In Table 7.4 the correlation coefficients between the State of Risk Readiness and various other Characteristics are compared, from which it is possible to establish certain causal links.

Table 7.4 Correlations between State of Risk Readiness and various other results								
No	Risk Characteristic	Source Table	B	Q	V	Test between No's	r=Corr. Coeff. (Pearson)	Ho: $\rho = 0$ H ₁ : $\rho \neq 0$ test stat with n-2=1 df at p(.005)= 0.959
1	State of Risk Readiness relative to King III and in terms of overall risk process in place	Table 5.2	7.6	3.5	6.9	-	-	-
2	How well the Company Manages its Risk	Table 5.2	7.4	5.4	5.7	1 and 2	r=.97	r>.959 reject Ho at p<.01
3	Board Tolerance to Source Dependence	Table 5.2	6.9	5.9	4.9	1 and 3	r=0.29	r<0.959 accept Ho
4	Influence of Budgetary Performance	Table 5.2	5.3	5.9	6.7	1 and 4	r=-0.21	r<0.959 accept Ho

5	Influence of Budgetary under-Performance	Table 5.2	6.0	5.7	7.2	1 and 5	r=0.41	r<0.959 accept Ho
6	Actual Control Achieved	Table 6.4	26.0	16.1	40.0	1 and 6	r=0.61	r<0.959 accept Ho
7	Controllability	Table 6.4	9.4	20.7	13.3	1 and 7	r=-0.99	r<-0.959 reject Ho at p<.01
8	Actual Cost	Table 6.4	3.1	9.2	10.0	1 and 8	r=-0.65	r<0.959 accept Ho
9	Style and Approach	Table 6.4	0.0	5.8	0.0	1 and 9	r=-0.96	r<-0.959 reject Ho at p<.01
All the above tests are to test the null Hypothesis $H_0: \rho = 0$, and $H_1: \rho \neq 0$. As the distribution of r is not symmetric and N is small (3) it is necessary to derive the distribution of r by generating a distribution of correlation coefficients from samples of 3 independent random variables, as discussed further in Appendix I, to arrive at a critical value of 0.959 for N=3 at p=.01.								

In Table 7.4 the Hypotheses tested were:

$H_0: \rho = 0$

$H_1: \rho \neq 0$

The green highlighted blocks in Table 7.4 show that there is a high degree of correlation between the State of Risk Readiness and 3 other factors.

- How well the company Manages its Risk (correlation coefficient $\rho=0.97$)
- Controllability (correlation coefficient $\rho= - 0.99$)
- Style and Approach to risk management (correlation coefficient $\rho= - 0.96$).

Bearing in mind that the results are prone to sampling errors, particularly in view of the fact that sample sizes are so small, it would nevertheless appear that Boards that are more prepared for risk in terms of their regulatory obligations, manage their risks better, have less need for greater control, and are less concerned with style and approach to their risk issues.

7.4 Brief observations on Board Remoteness From Reality

In the pilot study (Section 4.3.4, Interviewee 9), Board “Remoteness From Reality” was identified as a potentially important and major source of corporate risk and failure.

Figure 7.1 below shows a comparison between the Risk Readiness Index (Figure 5.2) and the average Remoteness From Reality for each company derived from the RepGrid data. These results show that the higher the level of Risk Readiness, the lower the Board’s **perceived** level of “Remoteness From Reality” risk.

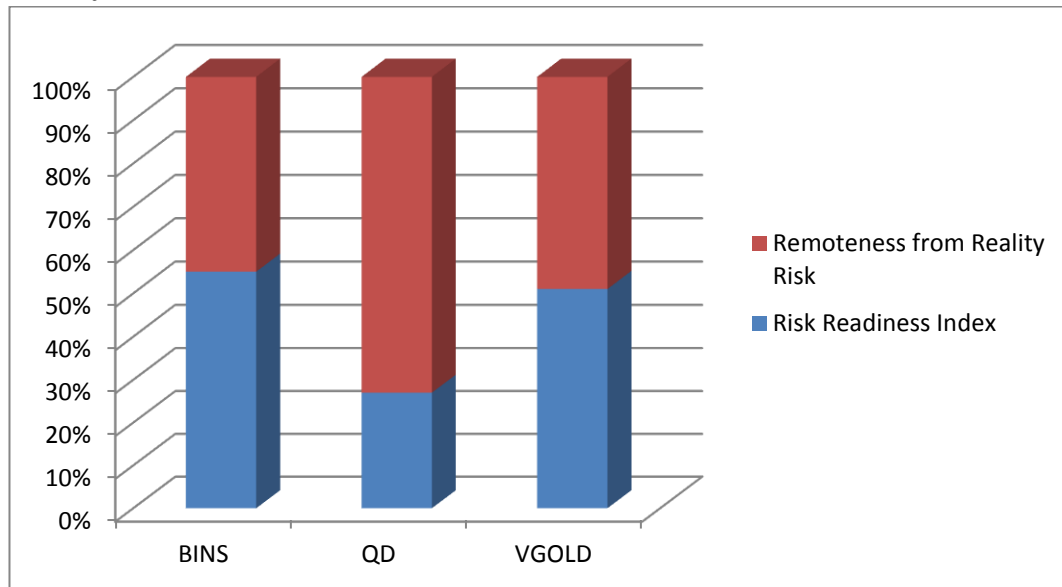
The data in Table 7.5 can be graphically represented as shown in Figure 7.1 by transforming each company's ratings into percentages, so that the degree of Risk Readiness and Remoteness From Reality can be compared across the 3 companies.

Table 7.5 Risk Readiness Index vs. Remoteness From Reality Risk			
Entity	BINS	QD	VGOLD
Risk Readiness Index RRI (Figure 5.2) 11 point rating scale*	7.3/11 =66%	2.9/11=26%	6.3/11=57%
Remoteness From Reality RFR 5 point rating scale**	2.7/5= 54%	3.5/5= 70%	2.7/5=54%
RRI : RFR as a ratio of percentages***	66:54	26:70	57:54
RRI : RFR as a ratio of rebased (to 100) percentages****	55:45	27:73	51:49
<p>*The Risk Readiness Index RRI (Figure 5.2) was derived from the Risk Readiness Questionnaire which was based on the questions and 11 point rating scale in order to remain consistent with the techniques used by Beasley et al. (2010). The ratings from the questionnaire (7.3, 2.9, 6.3) were expressed as a percentage of the overall maximum rating (i.e.11).</p> <p>**Remoteness From Reality RFR measures are obtained from the results of the RepGrid interviews. The numbers shown above (2.7, 3.5, 2.7) are the averages, for each company, of the 5 point ratings of the risk element "Remoteness of Reality" against the supplied construct "Overall a higher source of potential risk to the business". These scores therefore provide a measure of the relative perception, on average, of each Board respectively, of the level of remoteness from reality risk. These average ratings have been expressed as a percentage of the overall maximum rating (i.e. 5) to arrive at the percentages shown. These percentages (54%, 70%, 54%) therefore represent the relative overall degree of perceived concern of remoteness from reality expressed as a percentage of the maximum possible rating.</p> <p>*** Figures represent the ratio of the RRI to the RFR percentages shown. This is simply the ratio of the actual percentage relative to maximum possible rating, for Risk Readiness and Remoteness of Reality, for each company respectively.</p> <p>**** RRI : RFR ratios are rebased to proportions out of 100 to facilitate comparison across 3 companies. Thus $55 = 100 * 66 / (66 + 54)$. The resultant numbers simply express the ratio for each company of the degree of Risk Readiness to the degree of Remoteness of Reality for each company on a consistent arithmetical basis.</p> <p>It is useful to calculate the correlation coefficient between Risk Readiness RRI and perceived Remoteness From Reality for all three companies, which is $r = -0.98$.</p> <p>99% confidence limit for the correlation coefficient = $[-0.994; -0.09]$ at $p = 0.99$, derived using Hotelling's z transformation for small samples (Kendall and Stuart, 1969, Vol. 1, p.391) $z = 5 * \ln[(1+r)/(1-r)] = -2.30$, $z^* = z - (3z+r)/(4n) = -1.64$ and $\sigma = 1/(n-1) = .5$, where $n=3$, and the confidence limit is $P(z^* - Z_{\alpha/2} \cdot \sigma < z < z^* + Z_{1-\alpha/2} \cdot \sigma) = 1 - \alpha$ and Z is approximately normally distributed. $z = -2.30$, $z^* = -1.64$, and $\sigma = 0.5$ and $\alpha = .01$, $Z_{.995} = 2.58$. The confidence limit of z is therefore $[-2.93; -0.35]$ which re-transformed using the z transformation results in the above confidence limit.</p> <p>All the above tests are to test the null Hypothesis $H_0: \rho = 0$, and $H_1: \rho \neq 0$. As the distribution of r is not symmetric and N is small (3) it is necessary to derive the distribution of r by generating a distribution of correlation coefficients from samples of 3 independent random variables, as discussed further in Appendix I, to arrive at a critical value of -0.959 for $N=3$ at $p=.01$. As $r = -0.98$, Reject H_0, $p < .01$.</p>			

From Table 7.5 it is possible to see that the hypothesis $H_0: \rho=0$, where ρ is the correlation coefficient between the levels of Risk Readiness and the perceived degree of Remoteness of Reality of the Board can be rejected, $p < 0.01$.

Figure 7.1 below presents these results graphically.

Figure 7.1 Comparison of the Risk Readiness Index and the Remoteness From Reality Risk



This Figure 7.1 shows diagrammatically that the greater the level of Risk Readiness, the lower the perceived Remoteness of Reality Risk by members of the Board.

In reference to the large global companies referred to earlier in this Chapter all were very highly regulated, had competent staff and had extensive risk management systems and controls. So why did the management let things get so far out of control? The common theme may be that they were not sufficiently in touch with the reality of what was happening further down the chains of command of the business. A possible explanation is that high levels of compliance induced a false sense of confidence that risk was under control, leaving Boards vulnerable and unprepared to anticipate the risk. This is a ***behavioural form of moral hazard***. What is not clear however is whether the converse applies, that is, when Boards were thinking of overall risk to their businesses, were they thinking specifically of remoteness from reality, which might have prevented the above disasters? Thus if Boards were to establish internal mechanisms via an independent risk committee specifically to establish in what areas they were drifting from reality, is it possible that some corporate failures may be averted?

In the Sections which follow, the analysis of some of the above issues will be dealt with in greater detail.

7.5 Further theory development

From the data and results discussed earlier in Chapters 5 and 6 it is evident that there are a number of behavioural characteristics which are common to each company, and a range of behavioural characteristics which are not shared across all three companies. These observations give rise to a general hypothesis which will be developed and presented in more detail.

7.6 The General “Common/Variable” hypothesis relating to behavioural Characteristics around risk

The reader will recall that data was derived from 22 individual Board members from 4 different sources: Risk Readiness Questionnaire, Risk Aversion Questionnaire, Risk Bias Questionnaire and the RepGrid interviews.

The salient results of all 4 sources of data are summarised in the following Table 7.6. Companies demonstrate a similar position with respect to certain Risk Characteristics and have differing positions with respect to other Risk Characteristics as shown below.

Table 7.6 Summary of the empirically derived Risk Characteristics of BINS, QD and VGOLD with ratings				
Empirical Risk Characteristics	BINS	QD	VGOLD	Source of information
Risk Readiness Questionnaire				
Degree of increase in risk intensity over past 5 years	High(7.9)	High(7.9)	Medium (7.2)	Table 7.1
State of Risk Readiness	High(7.6)	Low(3.9)	Medium (6.5)	Table 7.1
How well does company manage its risk	High(7.5)	Low(4.0)	Medium(5.7)	Table 7.1
Board tolerance to Source Dependence	Medium(5.9)	High(6.9)	Low(4.9)	Table 7.1
Board Risk Tolerance when Budgets achieved	Medium(5.3)	Medium(5.9)	Medium(6.7)	Table 7.1
Board Risk Aversion when Budgets not achieved	Medium(6.0)	Medium(5.4)	High(7.7)	Table 7.1
Do the Boards members within each company think differently about their risk issues	Yes	Yes	Yes	Table 5.3
Risk Aversion Questionnaire	BINS	QD	VGOLD	

Risk aversion facing gains	Neutral (6.0)	Neutral(6.0)	Risk avoiding (7.5)	Table 5.6
Risk tolerance facing losses	Highly risk seeking(3.0)	Very highly risk seeking (2.0)	Risk seeking/neutral(4.0)	Table 5.6
Risk Bias Questionnaire	BINS	QD	VGOLD	
Response to low probability gain event	Underestimates risk (4.0)	Underestimates risk pronounced (2.0)	Underestimates risk (3.0)	Table 5.6 and Figure 5.3
Response to high probability gain event	Underestimates risk(4.0)	Underestimates risk pronounced(3.0)	Underestimates risk (4.0)	Table 5.6 and Figure 5.3
Response to low probability loss event	Overestimates risk (7.5)	Underestimates risk pronounced (3.0)	Underestimates risk (4.0)	Table 5.6 and Figure 5.4
Response to high probability loss event	Underestimates Risk (4.0)	Underestimates risk pronounced (3.0)	Underestimates risk (4.0)	Table 5.6 and Figure 5.4
Loss Aversion	No evidence (6.0)	No evidence (6.0)	No evidence (6.0)	Table 5.7 and Figure 5.5
Increasing Risk Sensitivity when facing gains	Moderate risk sensitivity (6.0)	Moderate risk sensitivity (6.0)	Moderate risk sensitivity (6.0)	Table 5.7 and Figure 5.5
Diminishing Risk Sensitivity when facing losses	Neutral (6.0)	Moderate risk tolerance (7.0)	Slight risk tolerance (7.0)	Table 5.7 and Figure 5.5
Repertory Grid Interview/Analysis	BINS	QD	VGOLD	
Board's focus on Achieved Actual Control	Very Intense	Intense	Very Intense	Table 6.4
Actual Control Potential over risk issues	Intense	Intense	Intense	Table 6.4
Extent to which Board feels the Need for Control over risk management	Intense	Very Intense	Intense	Table 6.4
Potential Riskiness when considering risk issues	Intense	Intense	Intense	Table 6.4
Degree of focus on Knowledge when considering risk issues	Moderate	Moderate	Moderate	Table 6.4
Degree of focus on Actual Cost of risk mitigation when considering risk issues	Moderate	Moderate	Moderate	Table 6.4
Degree of focus on Resources when	Moderate	Moderate	Moderate	Table 6.4

considering risk issues				
Degree of focus on Return on Cost when considering risk issues	Moderate	Moderate	Moderate	Table 6.4
Degree of focus on Term of Risk when considering risk issues	Moderate	Slight	Moderate	Table 6.4
Degree of focus on Freedom of Choice when considering risk issues	Slight	Slight	Slight	Table 6.4
Degree of focus on Style and Approach to risk issues	Slight	Moderate	Slight	Table 6.4
Degree of focus on Techniques when considering risk issues	Slight	Slight	Slight	Table 6.4
Degree of focus on Consensus amongst Board members when considering risk	Slight	Slight	Slight	Table 6.4

In order to simplify the analysis of the results contained in the above tables and to enable further conclusions and causal relationships to be identified, the following amendments have been made to Table 7.6 in arriving at Table 7.7 below:

- Table 7.7 comprises all the Characteristics shown in Table 7.6 which differ across all three companies respectively;
- the Risk Readiness elements have been removed as the state of Risk Readiness will be used as the dependent variable in establishing any relationships;
- the ratings of the Characteristics “Controllability” and “Style and Approach” were almost perfectly negatively correlated with the state of Risk Readiness as shown in Table 7.6. The wording of the ratings has been changed so that they correlate positively with the state of Risk Readiness, so that all Characteristics are positively correlated. “Controllability” will therefore become “No Controllability”, and “Style and Approach” will become “No Style and Approach”, and “Actual Cost” becomes “Absence of focus on Actual Costs”.
- Ratings from the Risk Aversion Questionnaire and the Risk Bias Questionnaire were converted to the rating of 1 to 11 used in the Risk Readiness Questionnaire (high 7.5, medium 5.5 and low 3.5). The ratings for Achieved Actual Control will also be reduced to the 11 point range. These broad category ratings are indicated in the Table 7.7 below.

Table 7.7 Ratings for Characteristics which differ between the 3 companies				
	Risk Readiness – dependent variable (X)	BINS	QD	VGOLD
	State of Risk Readiness (Risk Readiness Index Figure 5.2)	7.6	2.9	6.3
No	Characteristics of risk behaviour which differ– independent variable (Y)	BINS	QD	VGOLD
1	Risk Aversion facing gains	6.0	6.0	7.5
2	Degree of bias to low probability losses	7.5	3.0	4.0
3	Degree of bias to high probability gains	4.0	3.0	4.0
4	Board has Achieved Actual Control	11.0	8.8	11.0
5	Extent to which Board feels there is No Controllability over risk management	6.4	1.0	3.3
6	Lack of Style and Approach to risk	11.0	7.2	11.0
Average		7.7	4.8	6.8
<p>Regression line $Y=X-1.75$</p> <p>Sample correlation coefficient $r= 0.99$. For this size of sample, the value of the correlation coefficient is large enough to permit the computation of a confidence interval**. See Appendix I.</p> <p>Test for Hypothesis that the correlation coefficient $\rho=0$; $H_0: \rho=0$, $H_1: \rho \neq 0$. As per Table 7.4 and Appendix I, the critical value under Pearson's test is 0.958 for $p<.01$, so that there is a relationship between State of Risk Readiness(X) and the Characteristics of risk behaviour which differ (Y).</p> <p>** 99% confidence limit for the correlation coefficient = [0.55;0.999] at $p=0.99$, derived using Hotelling's z transformation for small samples (Kendall and Stuart, 1969, Vol 1, p391) $z=.5*\ln[(1+r)/(1-r)]$, $z^*=z-(3z+r)/(4n)$ and $\sigma=1/(n-1)$, where $n=3$, and the confidence limit is $P(z^*-Z_{\alpha/2} \cdot \sigma < z < z^*+ Z_{1-\alpha/2} \cdot \sigma) = 1-\alpha$ and Z is approximately normally distributed. $z=2.64$, $z^*=1.90$, and $\sigma = 0.5$ and $\alpha=.01$, $Z_{.995}=2.58$. The confidence limit of z is therefore [0.62; 3.19] which re-transformed using the z transformation results in the above confidence limit.</p> <p>The ratings shown in No's 4, 5 and 6 were derived by calculating for each Company the percentage of Constructs selected under each Category, relative to the highest % score of that Company and converting to a 1 to 11 scale for consistency*. Where the Correlation Coefficient in Table 7.4 is negative, then to achieve a positive correlation, the rating used becomes complementary to the 11 point scale; thus a rating of 4 becomes $11-4=7$.</p> <p>*The 11 point scale was used in the Risk Readiness questionnaire (Beasley et al., 2010)</p>				

Table 7.7 shows that using a simple linear regression equation we can directly link the state of Risk Readiness to the ratings of those Characteristics of risk behaviour which differ between companies. The correlation coefficient is very close to 1, but lacks reliability, as does the coefficient of the dependent variable. However there is clearly a very close relationship between the levels of Risk Readiness and the Characteristics of

Risk Behaviour which differ between companies, evidenced by the 99% confidence interval of the correlation coefficient [0.55; 0.999].

Thus it would seem probable that the greater the degree of Risk Readiness:

- the greater the risk aversion facing gains;
- the greater the risk weighting for both low probability and high probability when facing losses;
- the higher the achieved actual control;
- the stronger the view that there is no need for (further) control;
- and the greater the lack of style and approach to risk.

The last 2 relationships seem counter-intuitive. A possible explanation is that the greater the degree of regulation, the less the company feels that it needs to control risk compared to other thought processes, as it already will have in place systems to control risk. Also, the greater the degree of Risk Readiness, the less attention is paid to issues such as “style” of risk management, as processes are in place and risk has to be dealt with according to an established company procedure.

While the above results have strong intuitive appeal there are clearly potential sampling errors, and other problems such as the subjective and arbitrary definition, choice and weighting of Characteristics; bias in the selection of Boards; the subjective choice of tests relating to risk aversion and risk bias; the uncertainty relating to which of the variables are independent and the extent of any cross-correlations between the variables, and so on.

The results do however support the earlier notion discussed in the literature review Chapter 2, that Boards comprised of individuals will exhibit human like behavioural characteristics and will struggle to make sense of their risk environment (Weick, 1995). Some issues will be easier to digest and manage, and Boards’ response may be consistent across some fundamental risk issues, while other less tractable risk issues will be related to the way the Board interacts and views its risk environment and the importance the Board attaches to its risk management obligations. It seems reasonable to imagine that Boards will therefore do some fundamental things in a similar way, and do other things in a different way. For example Boards (as required by law) keep a proper set of accounts to manage their financial risk, but not all Boards will have the same risk tolerance to strategic opportunities. Most Boards will strive to achieve profit objectives, but not all Boards will carry out a formal assessment of say political or IT

risk. Most Boards would want to expand their businesses, but each Board probably has a different way of making sense of the associated risks.

This argument perhaps leads to a general indicative “Common/Variable” risk hypothesis which needs to be tested by others researchers and is beyond the scope of this research:

Boards of companies will exhibit a COMMON set of behavioural characteristics when faced with risk and uncertainty. This Common set of characteristics will be similar irrespective of the size of company, the nature of the industry, and level of risk readiness of the company in terms of its corporate governance obligations. Furthermore Boards will attach the same level of importance to these COMMON characteristics when they consider risk. By contrast Boards will exhibit another distinct and complementary set of behavioural characteristics, the VARIABLE characteristics, to which Boards, in dealing with risk issues, will attach a different overall level of importance, which will be directly proportional to the extent of their compliance to corporate governance legislation in terms of risk management.

If true, this result may have important ramifications for better understanding of corporate risk management as it would result in greater predictability of behaviour by Boards towards their risk management.

7.7 Ramifications of the Common/Variable Behavioural Risk hypothesis

No matter how well or how poorly the company is being managed from a risk point of view, there is a fundamental or common understanding of risk issues. Thus all Boards ought to possess some basic expertise or skill which governs their risk management strategy, presumably providing some protection against the more obvious aspects of risk management. Thus Boards are inherently inured against some fundamental errors. The greater the degree of Risk Readiness, however, the more these Boards will pay attention to certain aspects of risk management than their less regulated counterparts.

7.8 Summary of the previous section

In summary it would appear there are significant similarities between certain aspects of risk behaviour within Boards, and all Boards may share a common set of behavioural characteristics; yet will differ in others, the extent of the difference being linked to the overall level of risk readiness of the company.

Chapter 8. Summary and Conclusions

8.1 Summary

This final Chapter starts by recalling the Aims and Objectives of this research and the conclusions discussed in Chapter 7, as follows:

The aim of the research is:

To examine why Boards, in spite of strict corporate governance guidelines, deal with the myriad risk issues facing the company, to different effect, in developing strategies to deal with enterprise risk management (ERM).

The objectives of the research and the brief conclusions drawn:

O1: To investigate to what extent Board members of companies which apply corporate governance regulations are liable to human bias in risk estimation.

Conclusion: there appears to be a direct inverse relationship with the degree of corporate governance and the degree of risk bias (Section 7.3).

O2: To investigate to what extent Boards which are less subject to individual human biases are more effective in developing strategies to deal with ERM.

Conclusion: there appears to be a direct inverse relationship between the degree of risk bias and the level of ERM. The direction of the causal relationship is not known, and there is insufficient data to quantify or test the strength of the relationship (Section 7.3).

O3: To investigate to what extent Boards that adhere to corporate governance, are more effective in developing strategies to deal with ERM.

Conclusion: there appears to be a high degree of correlation between the State of Risk Readiness and the degree of corporate governance with respect to risk management (Section 7.3).

O4: To examine the ways in which the estimation and personal construing of risk differs between highly compliant and less compliant Boards.

Conclusion: there appears to be a high degree of correlation between the State of Risk Readiness and 3 other Characteristics (Section 7.3);

- How well the company Manages its Risk (correlation coefficient $\rho=0.97$)

- Controllability (correlation coefficient $\rho = -0.99$)
- Style and Approach to risk management (correlation coefficient $\rho = -0.96$).

The remainder of this Chapter briefly summarises the background and key issues and steps taken in this research.

It has become evident that risk management is a highly complex area for businesses. Companies, particularly in South Africa, are required to comply with an onerous regulatory framework in terms of their corporate governance and risk oversight responsibilities.

This research has demonstrated that the analysis of how Boards deal with risk requires a profound understanding of the cognitive processes at work deep within the psyche of the Board; how they construe risk in terms of their risk responsibilities; how they make sense of that risk in terms of its quantitative impact on the company; and the myriad biases and influences which play out in the minds of the individuals as they discuss and negotiate appropriate Board responses to these factors.

In order to do this research, data was derived from 4 different sources, in order to evaluate four aspects of risk at Board level. 22 members of 3 Boards, operating in completely separate industries were interviewed. The companies were chosen with different levels of maturity relating to their risk management processes. QD, an electronics company, displayed a low level of adherence to risk management processes, while BINS and VGOLD, which had more advanced structures and processes, better to manage and identify their risks, were regarded as more highly compliant.

Four different questionnaires and interviews were presented to each member of the Board (except in the case of VGOLD, where only 3 of the 5 Board members were available, the other two being based in Australia). The data collection process consisted of:

- Risk Readiness Questionnaire designed to assess the level of readiness in the organisation;
- Risk Aversion Questionnaire;
- Risk Bias Question to test whether Boards as a cognitive entity displayed the characteristics propounded by Kahneman and Tversky (1992) relating to the way individuals behave;
- A Repertory Grid interview providing an in-depth view of how Board members construed and made sense of their risk.

The results of the questionnaires were analysed using statistical techniques. The RepGrid results produced over 200 personal constructs which were content analysed, and provided considerable insight into the way Board members and Boards as a whole construed risk. The findings were that the Boards were to a lesser or greater extent unprepared to deal with their risks according to the legislative requirements of King III (2009). This conclusion was corroborated by the findings of an independent survey carried out by Deloitte (2012).

In terms of consistency regarding risk tolerance and risk aversion amongst all groups, overall Boards appeared to be neutral in the face of gains, and risk seeking in the face of losses. Further all Board members tended to underweight their risks when facing gains and losses, apart from BINS which overweighted low probabilities facing losses, attributed possibly to their higher level of regulatory compliance. There was no evidence of loss aversion, nor was there any evidence of risk aversion facing losses, nor evidence of risk tolerance facing gains as predicted by Kahneman and Tversky (1992). Consistency amongst Board members relating to their views around risk was tested and it was evident that members within each Board had significantly different thoughts about risk.

It appeared that there were possibly strong links between levels of risk readiness and levels of competency; and between levels of risk readiness and levels of perception amongst the Board that risks were being well managed in the organisation. There was a negative relationship between the levels of risk readiness and the overall level of tolerance to risk and the feeling that Boards needed greater control over risk. There was slight evidence of source based bias in which Board members attached different levels of significance to risk depending on its source.

An important and apparently unique aspect of this research is the insight gained into how Boards make sense of their risk. Members were interviewed individually and the results were analysed using RepGrid techniques. These results were then fed back to the intact Boards. There is evidence as shown in Chapter 6 that individual Board members construe elements of their Company risk differently to the way they construe risk as an intact Board. Thus group sensemaking at Board level appears to differ from individual sensemaking. The development of the 'Group Sensemaking' theory led to the identification of another important phenomenon referred to as 'Reality Drift'. In making sense of their risk, Boards continually drift away from the reality of certain issues due to their inherent cognitive biases and exposure to false information.

An important aspect of this research highlighted a possible link between risk readiness, and certain behavioural aspects of Board behaviour with respect to risk, referred to in this thesis as the Common/Variable Risk Hypothesis, which proposes that Boards exhibit a common set of behavioural characteristics and responses with respect to risk, and a different set of behavioural characteristics with respect to risk which vary between companies. The extent of the variance of the variable characteristics is dependent on the degree of risk readiness of the firm.

This research has provided a fascinating insight into a broad range of issues relating to risk in the corporate environment. Boards are not fully prepared to deal with their risks; there are a host of external and internal issues which contrive to render unpredictable the future prospects of the firm; and it is evident that Boards are prone to errors of judgment and in-built biases when faced with risk.

8.2 Limitations of this research

There are several limitations of this research, which are dealt with below. Those which have already been dealt with in earlier sections are also repeated here:

8.2.1 Data Size and Sampling Errors

Due to the small number of companies chosen (3), and the relatively small number of Board members interviewed (22) there are clearly potential sampling errors and the possibility of unwarranted causal relationships (Kahneman, 2013), and other problems such as the subjective and arbitrary definition, choice and weighting of Risk Characteristics; bias in the selection of Boards; the subjective choice of tests relating to risk aversion and risk bias; the uncertainty relating to which of the variables are independent and the extent of any cross-correlations between the variables, and so on. While care was taken to use appropriate statistical techniques, the results must be viewed against the risk of random errors, particularly due to small sample sizes.

Of the 22 Board members interviewed in the main study, 21 were white males, and 1 an Indian female, which does not reflect the demographic profile of South Africa. While as discussed before there are legislative imperatives to change Board profiles, this is a slow process, particularly in view of the skills shortage amongst other population groups. More demographically representative companies may have resulted in different conclusions.

8.2.2 Methodological limitations

This research focused on a subjective set of risk factors and on a number of issues upon which the literature seemed to focus. Prospect Theory provided a basis to examine the

extent of risk aversion and risk bias. Prospect Theory has been much criticised in the literature, and there may be better techniques to measure these aspects of risk aversion and cognitive bias, particularly at a corporate level; and assuming, as the author did, that they were important variables to measure and link to other factors.

In the absence of a published set of questions in a South African context identified by the author, the basis of the questionnaire to establish the degree of risk readiness of South African companies was based on Beasley et al., (2010, 2011, 2012, 2013), and consequently USA regulatory bias may have been introduced into the data, although the Deloitte (2012) report focuses on much the same issues.

Although extreme care was taken to ensure the reliability of the RepGrid data, it is possible that the data and subsequent analysis were subject to interviewer bias and subjectivity in the choice of Risk Characteristics, upon which much of the analysis and conclusions were based.

8.2.3 Temporal bias

The regulatory landscape in South Africa is in a state of flux. As reported in this thesis, the extent of risk readiness in terms of regulatory adherence explains much of the behaviour of firms towards risk. As firms become more aware of their obligations, and as more measures are introduced, so the degree of risk readiness, cognitive bias, understanding of risk and the whole risk environment may change to the extent that the conclusions and observations in this research may, too, be subject to change over time.

8.3 Suggestions for further research

There are many aspects of this research which give rise to surprising results. The overall levels of readiness which are low by the standards set by King III (2009) are however consistent with the results of Beasley, et al. (2011), Deloitte (2012) who reported that generally firms were unprepared for their risk regulatory obligations.

In view of the fact that the data was derived from only 22 Board members spanning 3 companies, to enable more conclusive results to be drawn around Board behaviour relating to risk weighting and risk bias, a larger sample of companies should ideally be investigated, with different cultural profiles in terms of race and gender. It would also be instructive to compare these attitudes to risk within industrial sectors and across country borders, also in terms of size of company and possibly by the differences in regulatory framework, where such differences exist (e.g. between more highly and less highly regulated economies). It would also be interesting to examine gender and cultural issues of risk construction; to establish which areas of risk management are influenced

more by internal and external environmental factors; and which areas of risk are more influenced by our inherent psychological or genetic biases towards risk. The work of Kahneman (2013) deals with many of these issues from an individual viewpoint, and their application to Board behaviour would add more to the understanding of the way Boards arrive at decisions relating to risk.

Specifically, the areas of further research might:

- Consider the effect of different reference points (budgets, sales targets etc.) on the impact of risk bias in prospect theory and develop techniques to utilise uncertain prospects as opposed to (probability supplied) risk prospects, involving several outcomes. This would examine a more representative real life situation than the bi-polar risk technique used in this research.
- Test the Common / Variable risk hypothesis by using a wider sample and perhaps a more encompassing standardised set of behavioural characteristics.
- Test the concept of 'Reality Drift' to establish whether there is a systematic movement away from reality due to inefficiencies in the flow of data management within the firm, and skewed institutional pressure at the expense of field based logics to explain some or all the reasons behind corporate failures (Power, 2009, p.854).
- Test whether the identified phenomenon referred to as behavioural moral hazard exists and whether higher levels of corporate governance compliance engender a false sense of security against corporate risk.

8.4 Significance of results

This research will be of great interest to South African and other international Board members and researchers in the field of ERM, who are struggling to come to terms with understanding how to deal effectively with risk obligation issues:

- Firstly, the questionnaires designed for this thesis will provide South African companies with a further means of assessing their levels of legal risk compliance under King III (2009);
- Secondly, this research will broaden the level of understanding around risk issues, and in particular that managing risk requires a systematic approach and a high degree of skill and that companies which do not have expertise in the field of risk management are likely not to meet their risk governance obligations; and at the same time are likely to commit errors of judgement where risk and uncertainty are factors.

- Thirdly, Boards will be able to realise that there are many aspects to risk control and mitigation, and that they as Board members are subject to a large number of biases in terms of the way they construe risk. This may assist them in understanding that, in spite of strict corporate governance guidelines, they need to counteract these biases in arriving at a realistic view of the risks they face.
- Fourthly, there is evidence that the risk behaviour of firms may to some extent be predictable, being directly related to the degree of compliance and risk readiness; this will be of considerable interest to regulators.
- Fifthly, for researchers, the results of this study raise some considerable doubts as to whether cognitive bias in decision making around risky issues in a corporate environment can be described by the well accepted tenets of Prospect Theory.
- Sixthly, this research highlights a possible phenomenon referred to as ‘Reality Drift’ in which Boards of companies may gradually lose touch with key aspects of their businesses through a process of cognitive bias and false and inadequate information. This phenomenon may explain why Boards of many regulated companies make errors of judgement and overlook areas of major risks to their businesses;
- Seventhly, the research highlights a possible form of behavioural moral hazard in which regulated companies may suffer from a false sense of security against risk due to their compliance with risk management legislation.
- Finally, this research appears to be unique in the study of intact Boards, and adds to the important body of literature in respect of “sensemaking” and “group sensemaking”, particularly in the area of risk management. Considerable light is thrown on how Boards construe their risk, and how individual Board member constructs are transformed and coalesced into group constructs as Boards formulate and reformulate their combined view on the internal and external environment.

8.5 Answering the Research Question

In this final section we answer the research question, which is restated for convenience:

Why South African Boards construe elements of their regulatory obligations differently in respect of Enterprise Risk Management (ERM)

The answer to this question is many and varied, and can be set out under several headings:

8.5.1 Different institutional environments

BINS the insurance company is subject to a range of solvency and capital adequacy requirements, and an onerous set of reporting requirements in order to maintain its insurance license. It is necessary for the Board to be constantly aware of these issues, and to devote resources to implement their regulatory requirements. QD is subject to general corporate governance legislation and to direct regulation with the South African Reserve Bank relating to cash protection. VGOLD is subject Australian listing authority requirements, and to a range of mining specific regulation relating to mining rights, mechanisms for the sale of gold, and health and safety issues.

This research has shown that these Boards appear to respond to institutional pressures in different ways. Each of the companies assessed in this thesis were subject to different regulatory pressures, and devoted different levels of resource to their compliance program. It would seem that Boards view their regulatory options differently depending on the degree of institutional pressure applied to them.

8.5.2 Different levels of maturity with respect to regulatory compliance

The Boards analysed exhibited different levels of maturity with respect to their corporate governance and ERM, resulting in different attitudes to risk, and different processes and resource allocation with respect to their risk management; and further exhibited considerably different levels of skills, knowledge and comprehension of risk issues. In spite of this Board members focused on the 4 main construct categories citing:

- Actual Control Achieved
- Actual Control Potential
- Controllability
- Potential Riskiness

This observation led to the development of the Common / Variable Risk hypothesis. In spite of differences in type of company and their regulatory environment, businesses appear to share similar views on certain risk issues, and vary their views on other risk issues, with the degree of variation between companies on these latter risk issues depending on the extent of the differences in their respective risk preparedness or regulatory compliance.

8.5.3 Psychological and behavioural interactions in Board level relationships and Board dynamics

Boards are comprised of different individuals all with their own experiences, views, skills and knowledge. Each Board member is also a unique individual with their own personal set of constructs as this thesis has shown. Members interact with each other

and the resulting view of the Board is shaped by the interpersonal discussions, levels of knowledge, force of conviction and hierarchical issues within the Board. Boards composed of different personalities will therefore develop different Board responses to risk, and construe their risks differently.

8.5.4 Biases and behavioural issues

As shown in this thesis, Boards exhibit different degrees of cognitive bias when faced with risk. The degree of bias was shown to be linked to the degree of risk readiness within each company, so that Boards' construal of risk is associated to the level of corporate governance and ERM compliance. Generally Boards underweight the probability of gains, which means that they tend to view future risky projects in a pessimistic light, and tend to view the possibility of losses in an optimistic light, all of which have consequences in terms of the capital asset pricing model.

8.5.5 Conclusion

It is possible to state in conclusion that Boards construe elements of their regulatory obligations differently in respect of risk as a result of different regulatory and institutional demands; different levels of risk maturity; different levels of skills knowledge and experience; and different behavioural dynamics within the Board as members construe and re-construe their risk obligations; and Boards construe their risks differently from their individual members.

This thesis began by recalling the fatal flaws of the ancient mythical Homeric heroes when faced with risky challenges. Shakespeare too, reminds us that men's judgments facing risk and uncertainty are linked to their fortunes and the environment in which they find themselves. Marcus Antonius, the great Roman Triumvir, in facing the ultimate personal sacrifice, himself underestimated twofold the institutional might of Rome as an enemy, and the extent of Cleopatra's devotion to him, losing the respect of his generals, his empire, and his life in the process:

“I see men's judgements are become

A parcel to their fortunes; and things outward

Do draw the inward quality after them,

To suffer all alike.”

(Anthony and Cleopatra, Act III, Scene XIII, 31)

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